# APPLICATION OF OINTMENTS
## TO INTERNAL CAVITIES BY THE AID OF COLLAPSIBLE TUBES.

This method of treatment having become largely adopted, we present to the Medical profession a series of Ointments which have been thoroughly tested in the diseases indicated.

*For the Urethra two kinds of Catheters are recommended :—*

*Fig.* 1.

## For GONORRHŒA and URETHRITIS.

1st.—For recent cases. A Stiff Vulcanite Catheter (*Fig.* 1) is preferred (with this instrument we supply three Catheters, and it is advisable that the largest that can be passed without pain be used).

## For GLEET and Long-standing Cases of GONORRHŒA.

2nd.—A 9-in. "flexible" Catheter, and is intended for diseases far down the Urethra. Either of the above Catheters are supplied with Ointment Tubes containing the following medicaments :—

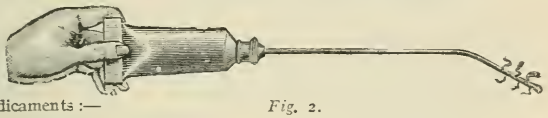

*Fig.* 2.

1. Iodoform & Eucalyptus
2. Do. do. and Cocaine
3. Thallin
4. Do. and Cocaine
5. Iodoform, Eucalyptus & Perchloride of Mercury
6. Dermatol
7. Aristol
8. Biniodide of Mercury
9. Hydrastin
10. Iodol and Eucalyptus
11. Sulphate of Zinc
12. Permanganate of Zinc
13. Resorcin, Hydrastin & Extract of Belladonna
14. Loretin
15. Protargol

*Price complete,* 5- *each; with Cocaine,* 6- *each.*
*Ointment Tubes without Catheters,* 1 6 *each; with Cocaine,* 2 6 *each; by post,* 3*d. extra.*

In ordering please specify number of the Ointment Tubes, and also whether the Stiff Vulcanite Catheters or the Long Flexible Stem is required.

## For DISEASES of the RECTUM.

Each Collapsible Tube is fitted with a specially designed Vulcanite Pipe.

*Fig.* 3.

WE PREPARE THE FOLLOWING OINTMENTS—

1. Boric Acid & Glycerine
2. Cocaine and Morphia
3. Ung. Gallæ c. Opio
4. Hamamelis
5. Do. and Cocaine
6. Ung. Conii
7. Ung. Belladonna
8. Chrysarobin, Iodoform, and Belladonna
9. Gallic Acid and Belladonna
10. Oxide of Zinc and Boric Acid
11. Perchloride of Iron
12. Acetate of Lead and Belladonna
13. Pilewort Ointment

*All the above Tubes complete with Pipe,* 1 6 *each, with the exception of those containing Cocaine and Conium, which are* 2 6 *each. By post,* 3*d. extra.*

## For DISEASES of the UTERUS.

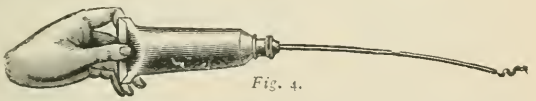

*Fig.* 4.

The Vulcanite Stem and Ointments have been made at the suggestion of Dr. DUKE, Cheltenham.

1. Antiseptic Iodoform
2. Do. (Boric Acid)
3. Astringent (Tannic Acid)
4. Escharotic (Chlr. of Zinc)
5. Anodyne (Cocaine and Morphia), *useful in Cancer*

Price of Stem, with Ointment Tube of either Nos. 1, 2. 3 or 4 .. .. each 5s.
,, ,, ,, No. 5 .. .. .. .. ,, 6s. } *By Post 3d. extra.*
Spare Collapsible Tubes of Ointment. Nos. 1, 2, 3 and 4 .. .. ,, 2s. }
,, ,, ,, No. 5 .. .. .. .. ,, 3s. }

*N.B.—We will be pleased to supply Tubes filled according to physicians' own formulæ.*

R. SUMNER & CO. Ltd. WHOLESALE AND EXPORT DRUGGISTS, LIVERPOOL.

# "ANTISEPTICINE" & its Preparations.

Registered.

"ANTISEPTICINE" is a non-toxic, non-irritating, and non-escharotic antiseptic, composed of Thyme, Eucalyptol, Peppermint, Gaultheria, and Benzo-Boracic Acid. It has been found most effective in all Catarrhal conditions of the mucous membrane, and an excellent Antiseptic Dressing for wounds, either surgical or accidental.

Internally, in Diarrhœa and Indigestion, arising from fermentation, it is invaluable, and is also strongly recommended in infectious maladies, such as Scarlet, Typhoid, and other Fevers, and, in fact, all Zymotic Diseases. As a Spray in a sick room it rapidly purifies the atmosphere.

Price 2s. 6d. per lb.

# "ANTISEPTICINE" DUSTING POWDER

Registered.

Is a strong germicidal Powder for dusting fresh wounds, burns, ulcers, or any kind of suppurating surface. It is not only an Antiseptic, but a mild Styptic and Sedative promoting rapid Cicatrisation and Granulation.

In Dusting Bottles 1s. each, or per lb. 5s.

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"ANTISEPTICINE" PASTILLES have been made at the suggestion of a medical man who found the "ANTISEPTICINE" itself so valuable in Throat Affections. Each Pastille contains five minims of the "ANTISEPTICINE."

In Boxes. 6d. each.
Or. in Bulk. 2s. 6d. per lb.

# "ANTISEPTICINE" TABLETS

Registered.

For the speedy production of an Antiseptic and Deodorising liquid for irrigation of the nasal urethral, and vaginal passages, or Lotion for ulcerated throat, etc.

One Tablet is sufficient to make 10-oz. of Antiseptic Lotion.

Boxes containing 50, 1s. each.

# 'ANTISEPTICINE" Super-Fatted SOAP IN POWDER.

Registered.

A powerful Antiseptic Soap, useful in various parasitical Skin Affections, and also refreshing as a Toilet Soap.

The Powder is a most convenient method for local application.

In Sprinkler Bottles, 8s. doz.; Bulk, 2s. per lb.

# "ANTISEPTICINE" TOOTH POWDER.

An excellent Preservative for the Teeth. 2 6 per lb.

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## R. SUMNER & CO., Ltd.,

## Wholesale Druggists, LIVERPOOL.

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# NEW URINARY TEST STAND.

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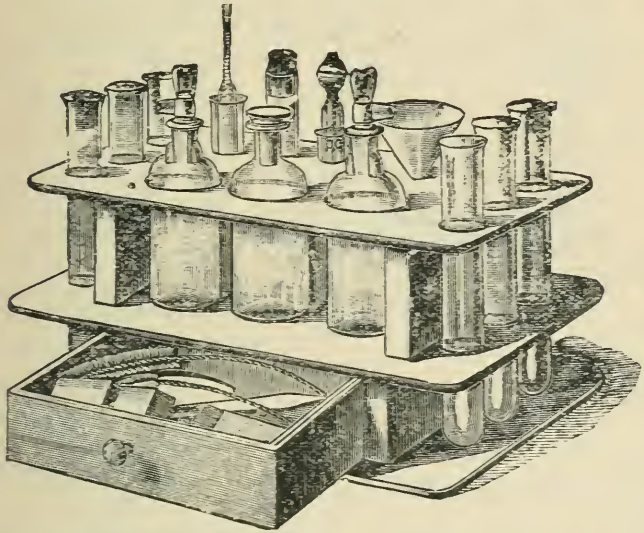


PRICE 10/6 EACH NET.

**Messrs. SUMNER & CO.** are particularly desirous ot calling the attention of medical gentlemen to their new **Urinary Test Stand.** This handy little Stand has been specially designed with the view of placing a complete set of Urinary Testing Apparatus, with Solutions, in the hands of medical men at an extraordinary low price. We offer it as being equal in every way to the more elaborate stands hitherto designed. Not only is it complete, but the different articles are so arranged as to take up a minimum amount of space, and, consequently, the Stand measures only 10¼-ins. by 5¼-ins. It is well and substantially made, and is really of good appearance, quite an ornament to a consulting room table. The contents are as follows :—

| | | |
|---|---|---|
| Urinometer | 2 oz. Stoppered Bottle of Nitric Acid | Funnel |
| Albuminometer | 2 oz. Drop Bottle of Roberts' Test Solution for Sugar | Test Tube Brushes |
| Spirit Lamp | 2 oz. Drop Bottle containing Esbach's Test Solution for Albumen | Packet each Red and Blue Litmus Paper |
| Drop Pipette with India Rubber Suction Ball | | Packets of Filter Paper |
| Graduated C.C. Tube | | Watch Glass |
| Test Tubes | | Graduated Pipettes |

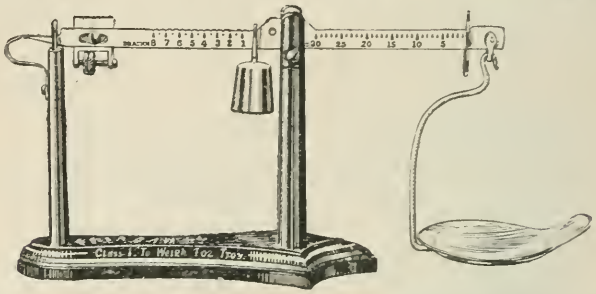
From the above it will be seen that, although offered at such a singularly cheap price, it is both compact and useful, and we may say without fear of contradiction, that a Stand of such exceptional value has never before been offered at the price.

*IT IS ADMIRABLY ADAPTED FOR USE IN HOSPITAL WARDS.*

R. SUMNER & CO., Ltd., 50a, Lord Street, LIVERPOOL.

. . NEW . .

# DISPENSING SCALE



THIS Scale is particularly convenient in dispensing, as it obviates the necessity of small loose weights. The entire capacity from ½ grain to 8 drachms is obtained by the large and small poises shown on the beam.

Much time is saved, and greater accuracy is obtained, as small loose weights are constantly collecting dirt or becoming worn in cleaning, which all tends to inaccuracy in weighing to say nothing of the inconvenience and annoyance of often losing such small weights as those indicating 10 grains and less.

This machine is small, takes but little room, can be easily moved about, and is always ready for instant use.

The loose glass pan will be found convenient, as small quantities of chemicals can easily be seen, and being of smooth glass it is easily cleaned.

These machines are quickly adjusted by the small balance balls shown on the beam, and each machine is stamped by the Inspectors of Weights and Measures before being sent out.

For accuracy, convenience, and durability, these machines surpass any scale of this class that has ever been offered, for fine weighing of small quantities. They will save their cost many times over during the first year of their use.

*Price 18/6 nett.*

*If purchasing a Personal Weighing Machine, first see Fairbanks' Catalogue, which can be obtained from R. Sumner & Co., Ltd.*

## R. SUMNER & CO., Ltd.,

Wholesale & Export Druggists,

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# Dr. BARR'S Apparatus
## for the Treatment of
# Serous Effusion.

Dr. Barr's method is, after syphoning off the fluid, to inject Suprarenalin or Adrenalin Solution, and pump into the cavity Sterilized Air.

The Instrument for this purpose which he devised, consists of a Trocar and Canula, with two branches supplied with stopcocks, which prevent air from entering the cavity during operation. The lower branch is used as a syphon; the upper branch is for the injection of the Suprarenalin and also the Sterilized Air.

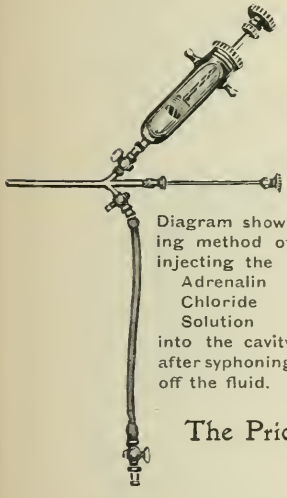

Diagram showing method of injecting the Adrenalin Chloride Solution into the cavity after syphoning off the fluid.

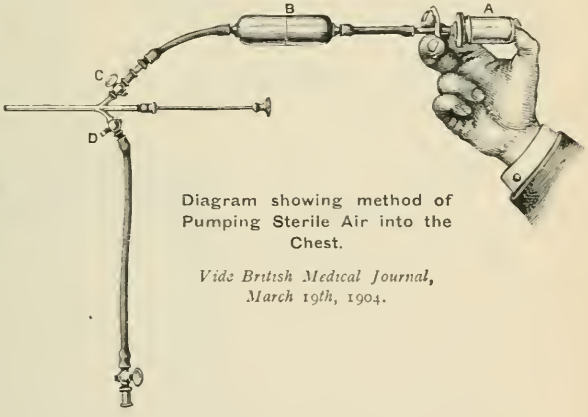


Diagram showing method of Pumping Sterile Air into the Chest.

*Vide British Medical Journal, March 19th, 1904.*

The Price of the Instrument, complete in metal case,

**£3 3 0**

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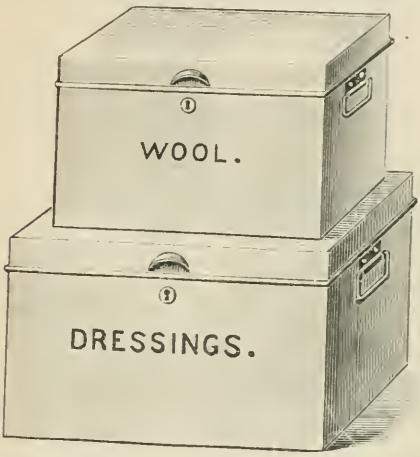


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**BOXES, fitted with Lift-out Dividing Trays,** 4 ins. deep, 16 × 10 × 10 inches each **15/6** | 18 · 12 · 12 inches, each **18/6**

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Intended either to hang on Wall, or rest on a Table.

SIZE WHEN CLOSED:
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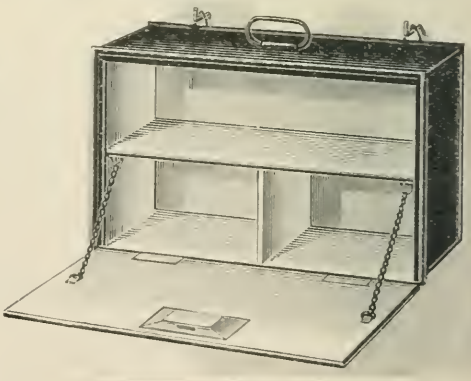
**17/6** each.



**FOLDING BOXES** for carrying Instruments, Dressings, etc., to Operations, price **18/-**. *Outer Canvas Cover & Strap, 5/6 extra.*

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For Constipation, Gout & Rheumatism,
Liver Complaints, Obesity, &c.,
PRESCRIBE

# Hunyadi János

***THE BEST NATURAL APERIENT WATER.***

**Directions for Use.**

**Dose.**—To relieve constipation the average dose for an adult is from a third to half a tumbler, taken on an empty stomach on rising. To obtain the depurative and tonic effects in dyspepsia, biliousness, congestion of the Liver, &c., a quarter of a tumbler should be taken *every* morning before breakfast.

"Hunyadi János" may be taken pure or mixed with hot or cold water. If hot water be used the temperature should be high enough to make the mixture as hot as can be drunk comfortably. If cold, the water should be at the ordinary temperature, that is to say, not iced or ice-cold.

A draught of pure water, hot or cold, taken immediately after, increases the efficacy of the laxative and obviates any after-taste.

**For Children.**—The dose is proportional to the age. Between 5 and 10 years of age from one to two teaspoonfuls of the water, which may be mixed with milk, will be sufficient. Above 12 the dose is a quarter of a tumbler, taken as above.

N.B — When administered to persons in bed, somewhat larger doses are required to produce the same effect.

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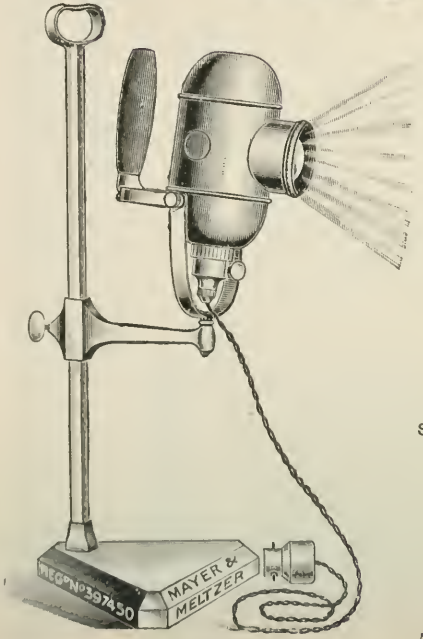
# THE "UNIVERSITY" EXAMINATION LAMP.

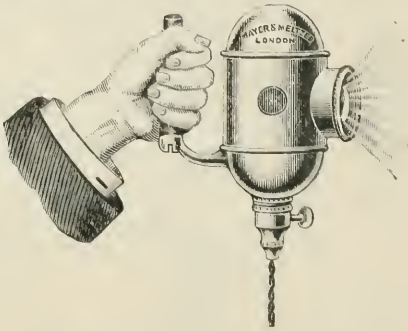
**M. & M. Regd. Design.**




This lamp is rapidly coming into favour amongst specialists; it has been supplied to the London and University College Hospitals, for Throat and Out-patient Departments, and many other Institutions. It shows a clear disc of light without any image of the filament. The lantern can be turned in any direction and the lens thrown out of action for Ophthalmic work. The lantern can be lifted out of its cradle and used as a hand lamp for rectal and vaginal examination.

Fitted to Floor, Table Standard, or to Wall Bracket.

For the Consulting Room it is unrivalled.

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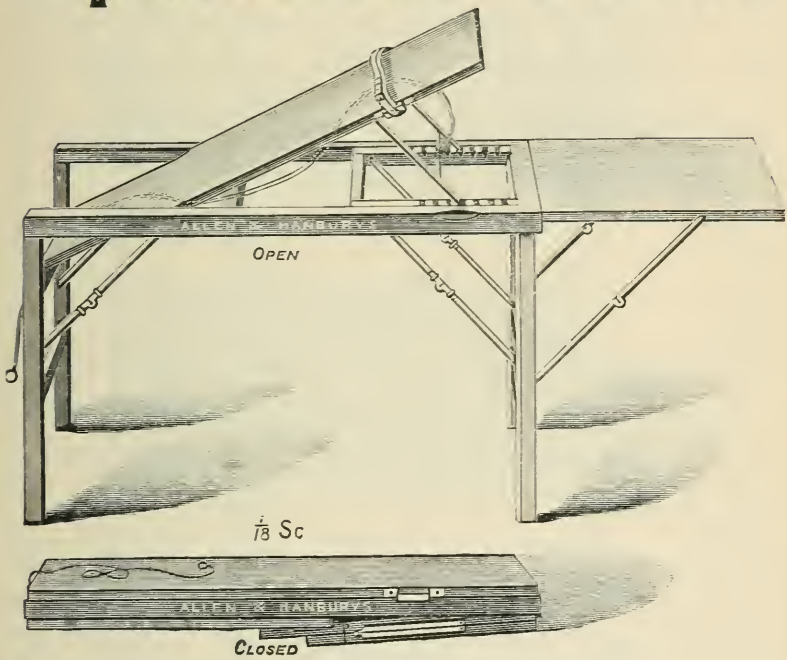


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The Trendelenburg position can be readily obtained in a very simple manner, and is automatically fixed.

**Price ... ... £5 15 6 each.**

Strong brown canvas waterproof case, leather bound for above,
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By Appointment to the Honourable Council of India,
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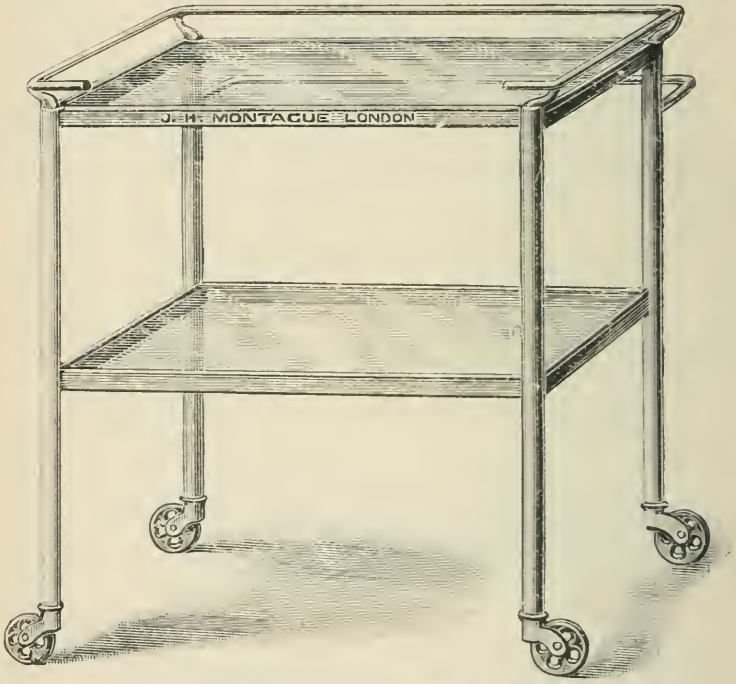


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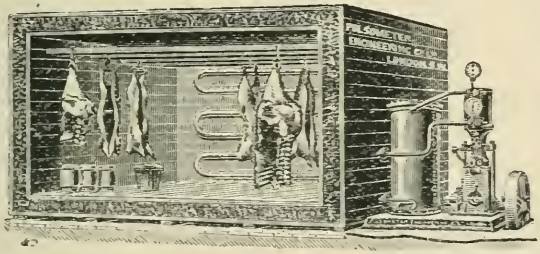
## For Hospitals

### Is not a Luxury, but an Economic Necessity.



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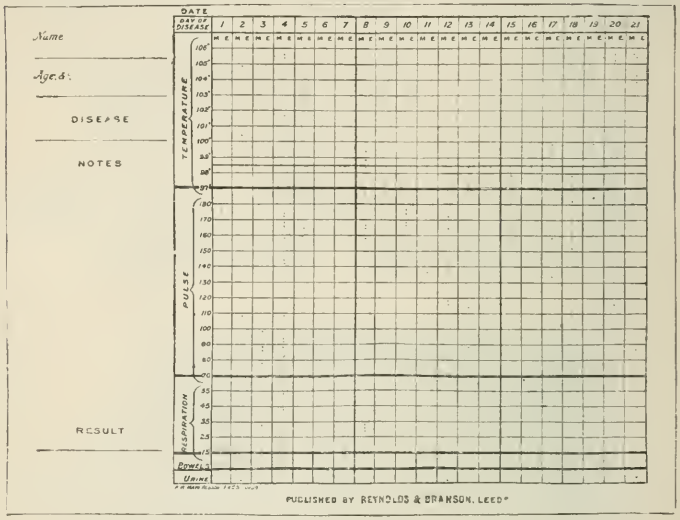
# Clinical Charts

Suggested by A. W. MAYO ROBSON, Esq., F.R.C.S.




THE chief advantage claimed for these Charts is that the temperature, pulse, and respiration is recorded by means of dots, and any variation can be seen at a glance, instead of having to refer to figures, as in the case of an ordinary Chart.

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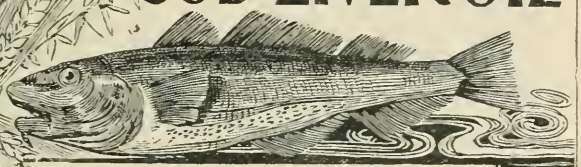

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Each fluid ounce contains:—

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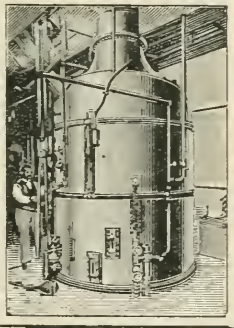
Indicated in preference to Syrups of Hypophosphites.



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## Prepared from FINEST MEAT ONLY.

***In Bottles - - 2/6 each.***

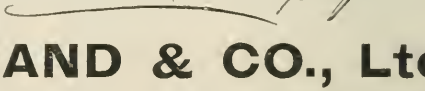
MEDICAL PRESS, *July 30th, 1902, says:—*

"THIS meat juice, which is extracted from the best beef in the cold, must be clearly distinguished from the ordinary meat extract, to which it is greatly superior in composition and digestibility. We find on analysis that it contains nearly half its weight of assimilable nutrient materials, of which a large proportion is coagulable albumen that is not overcrowded with mineral matters, which are a great drawback in many meat preparations, containing as they do large quantities of salt.

# Brand's Essence of Beef.

"The essence has a very agreeable flavour of fresh meat, and will keep good any length of time when unopened. It may be given either alone, when it is perfectly palatable, or mixed with aerated water. In the case of wasting diseases, fevers and the like, it does not produce nausea, and is retained by the stomach (we are speaking from actual experience) when many other foods are instantly rejected."

*Each genuine article bears the signature—*



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**MILK** should be the essential part of Any **INFANTS' FOOD**

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MARTIN D. GOLD, *Secretary.*

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Each contains five grains of the Citrate, and affords a convenient method for administering a definite quantity of soluble Lithia in a pleasant form, besides the advantage of having fresh water with each dose; presenting a therapeutic value of a higher standard than the various spring waters, which often contain but an indefinite quantity of the necessary salt.

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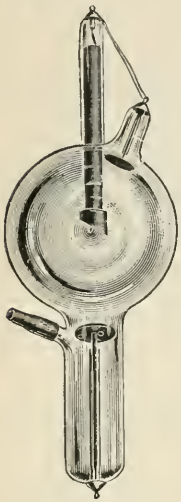

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Greater penetrating power. | Very much less toxic effects.
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A valuable urinary antiseptic and uric acid solvent, very efficient in all suppuratory diseases of genito-urinary tract, pyelitis, cystitis, with ammoniacal decomposition of the urine, phosphaturia, and also in gouty and rheumatic affections, where active elimination of uric acid and the urates is required. Highly recommended in typhoid bacteriuria as a prophylactic against the spread of typhoid fever.

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Ten per cent solution of Silver Nitrate in Ethylenediamine.

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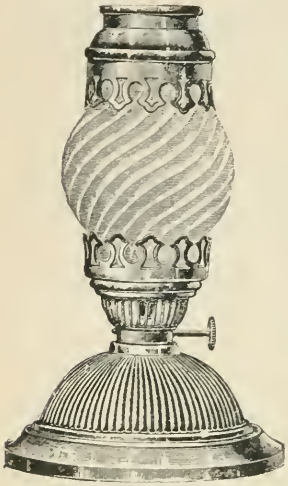

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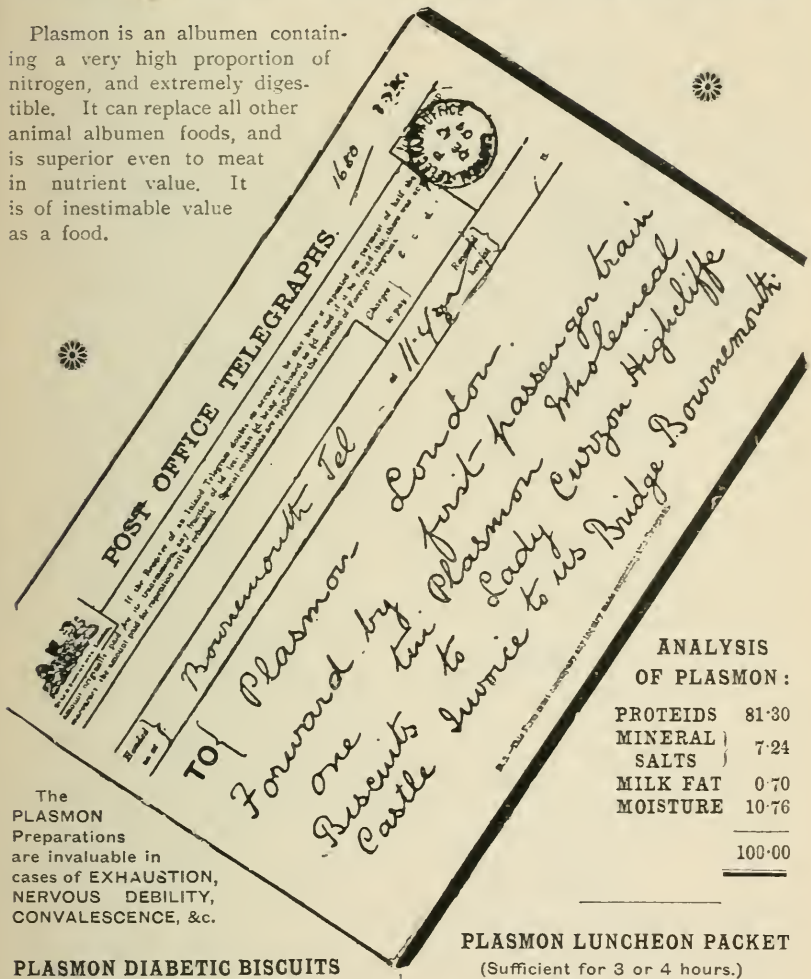


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A prompt analgetic in all diseases in which an excessive accumulation of uric acid in the organism, or conditions directly resulting therefrom, are in question, viz.: Gout, Calculi, etc.

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A new Salicylic Acid derivative for outward application in the treatment of rheumatic and gouty affections, muscular rheumatism (lumbago), neuralgic pains (not sciatica); also for relieving the pains in chronic gout (rheumatoid arthritis).

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Easily absorbed by the skin.

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A reliable substitute for the Salicylates, without their unpleasant by-effects.

Does not cause nausea, tinnitus aurium, etc.

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A new Antiseptic of very high quality in diseases of the bladder. Exceedingly favourable results are obtained in Cystitis, Pyelitis, Phosphaturia, Urethritis, Gonorrhoica Posterior, and . . Abscesses of the Urethra.

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# Battley's Solution of Opium.

## LIQUOR OPII SEDATIVUS (BATTLEY).

STRENGTH—Twice that of Tinctura Opii B.P.

**Battley's Solution of Opium** may be given with the greatest of safety in those cases where an opiate is required or indicated, and from its great purity, absence of all hurtful matter, such as narceine and resinous bodies, is admissible when all other preparations would prove hurtful.

**Liquor Opii Sedativus (Battley)** having now existed for nearly 100 years, and after being opposed by vain and worthless opponents has upheld its old position as "Second to None" in the Hypnotic World."

**Battley's Solution of Opium** has none of the disagreeable after-effects that most soporifics and hypnotics have, no nauseating or depressing influences, with racking headaches, etc., but exercises a quieting and benign sway over the patient, giving him or her a refreshing sleep with freedom from pain. The last few years it has come to the front in cases of Cancer and Sarcoma, having been used widely both in private and hospital practice with great ease and comfort in these instances.

**Battley's Solution of Opium** never varies in strength.

**Battley's Solution of Opium** does not leave behind it any unpleasant effects.

**Battley's Solution of Opium** is now in use throughout the United Kingdom; throughout the Continent (France excepted); the Colonies, and largely in America, both South and North; and we ask all those who have not tried BATTLEY'S SOLUTION OF OPIUM to send for Samples (Free).

The *Medical Annual*, speaking of Opium says: "**Battley's Solution of Opium** is a common word in the Practitioner's vocabulary. It has gained its reputation by its intrinsic value as a remedy which contains all that is sedative and anodyne in opium without its resinous constituents which are, therapeutically speaking, impurities."

The *Lancet* speaking of Opium says: "New Hypnotics come and go, each with hopeful forecast of being superior to those already known, each in turn aspiring to give **peaceful refreshing sleep**, which shall be followed by no **unpleasant after-effects**; and yet, in the minds of many thoughtful practitioners, opium and its preparations still maintain their ground." We would point out to the Medical Profession that Battley's Solution of Opium has for the past eighty years answered these **three** most important requirements, and stands out above all other hypnotics in excellence.

## LIQUOR OPII SEDATIVUS.

The striking appearance resulting from the evaporation of Battley's Sedative (*Plate III. Fig.* 1) first drew our attention to the mode of investigation now described. We have examined it frequently, and always have met with the same characters. The slides present an almost opaque mass of crystals of morphine salts and codeine, with a very small portion of narcotine (and meconic acid ?), and so far as we have observed, complete absence of resinous matter and narceine. **Any one who has studied the microscopic characters of this preparation will readily understand how it has kept its place with the Profession in spite of the cheap imitations which have been so largely puffed as substitutes for it.** Though we have experimented much with a view to preparing a similar liquor, we have not yet arrived at an identical result.

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We do not guarantee our Preparation unless in original bottles, with the autograph of RICHARD BATTLEY over each cork and on the label, *without which none is genuine.*

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THERAPEUTIC ACTION is based in theory upon the following fundamental principles its prime object being to keep the blood circulating in the diseased part:

The blood, which normally circulates fully and freely through the vascular system is the food supply of the millions of cells which make up the body structure. Inflammation means certain successional deviations or interferences with the circulation in some part or parts. In health, the functions of the vascular system are automatically controlled by the central nervous system. Three-fourths of the body composition is fluid—chemically speaking, water—and as a magnet has affinity for particles of steel, so Antiphlogistine has affinity for water. Antiphlogistine is an antiseptic, a non-conductor of heat, and a vasomotor stimulant. The skin may be regarded as a permeable membrane, separating two fluids of different densities, the blood and Antiphlogistine. If Antiphlogistine is applied not under such conditions something definite happens and that scientifically—an interchange of fluids, most marked towards Antiphlogistine; hence the deduction that Antiphlogistine acts through reflex action and dialysis, the latter scientifically including the physical processes of exosmosis and endosmosis.

DEEP-SEATED STRUCTURES—If Antiphlogistine is applied warm and thick, the thicker the better, for pneumonia, pleurisy, bronchitis, peritonitis, or any affection involving deep-seated structures, it maintains a uniform degree of heat for twenty-four hours or more; it stimulates the cutaneous reflexes, causing a contraction of the deep-seated and coincidently a dilatation of the superficial blood-vessels; at the same time it attracts or draws the blood to the surface—flushes the superficial capillaries—bleeds but saves the blood; thus the aggravating symptoms will be almost always immediately ameliorated; congestion and pain are relieved; the temperature declines; blood pressure on the overworked heart is reduced; the muscular and nervous systems are relaxed and refreshing sleep is invited.

SUPERFICIAL STRUCTURES—It is no longer proper to treat with the old-fashioned bacteria-breeding flaxseed poultice, boils, felons, sprains chronic ulcers, inflamed glands, periostitis, and other types of inflammation, involving comparatively superficial tissues. Antiphlogistine is a soothing antiseptic well adapted to sensitive and abraded surfaces. It draws out or absorbs the liquid exudate from the swollen and sensitive tissues, the result being that the blood is permitted to circulate freely through the affected area and nourishment is conveyed to the injured cells. Through reflex action and endosmosis a stimulating, alterative, tonic and soothing influence is exerted upon the affected cells, lymphatics and other tissues.

GENERAL DIRECTIONS—Always heat in can never on a cloth by placing it in hot water. Do not allow water to get into the medicine. When as hot as can be borne, take a suitable knife and apply as quickly as possible, spread the Antiphlogistine on the skin over the affected part, at least an eighth of an inch thick and covering promptly with a liberal supply of absorbent cotton and a suitable bandage or compress. Needless exposure to the air or contact with water markedly reduces the remedial value of Antiphlogistine, hence make all applications quickly. Remove dressings as soon as they will peel off nicely—in twelve to twenty-four hours.

To insure economy and the best results always order a full package and specify the size required—Small, Medium, Large or Hospital Size.

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Their prices are extremely reasonable, in fact they come 30% or 40% cheaper than foreign makes.

Their base is made from the very best gum benzoin.

They are spread on a fabric which is totally unaffected by boiling or cold water, by alkalies, acids, or urine, and is utterly impermeable.

Their adhesiveness is superior to any other set of plasters.

They are not messy, that is to say, the plaster will not extend from the fabric and will cause neither an unsightly mess nor sticky edges.

| No. | Name. | Percentage Composition. | Price. |
|---|---|---|---|
| 1 | Acid Carbolic ... ... ... | 5% | 1/9 yard |
| 2 | Do. do. ... ... ... | 10% | 1/10 yard |
| 3 | Acid Salicylic ... ... | 10% | 1/6 yard |
| 4 | Do. do. ... ... ... | 20% | 1/8 yard |
| 5 | Do. do. ... ... ... | 50% | 2/3 yard |
| 6 | Adhesive with a little Zinc Oxide ... .. ... | — | 1/- yard |
| 7 | Hydrargyrum ... ... | 45% | 2/3 yard |
| 8 | Do. ... ... | 60% | 2/6 yard |
| 9 | Ichthyol ... ... ... | 5% | 2/- yard |
| 10 | Plumbi Iodidi ... ... | 40% | 2/6 yard |
| 11 | Resorcin ... ... ... | 20% | 2/4 yard |
| 12 | Surgeons' Infirmary Plaster on Brown Holland ... | — | 1/6 yard |
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| 14 | Do. do. ... ... ... | 40% | 2/- yard |
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| 16 | Acid Salicylic ... ... | 5% | 1/6 yard |
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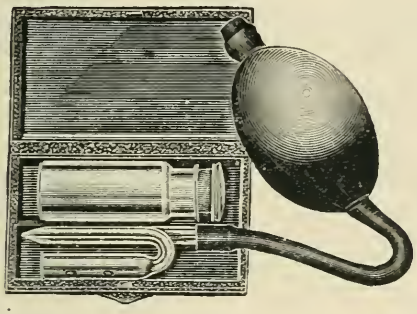

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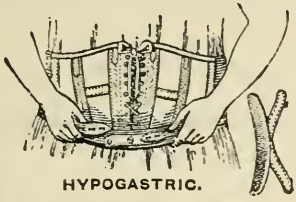

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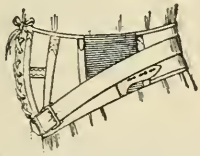

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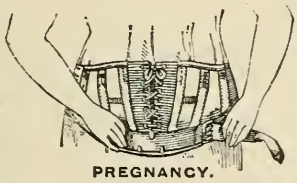

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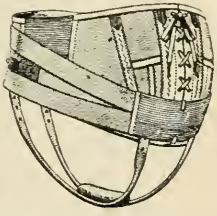

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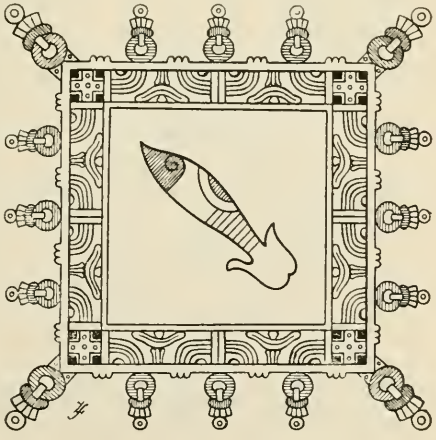
THE ASTROLOGICAL SIGN OF THE FLINT KNIFE AS REPRESENTED BY THE ANTIENT MEXICANS

The sign of the Flint Knife was allotted to the teeth. Toothache and other ailments connected with the teeth and gums were supposed to be influenced by it.



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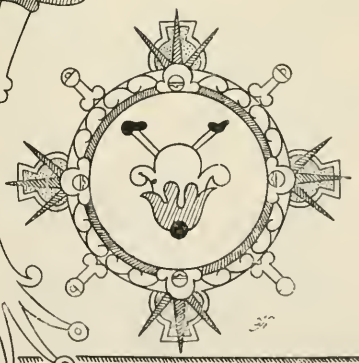

THE ASTROLOGICAL SIGN OF THE ROSE AS REPRESENTED BY THE ANTIENT MEXICANS

This sign was believed by the antient Mexicans to govern the breasts. Diseases incident to these glands and to lactation were supposed to be influenced by the Rose.

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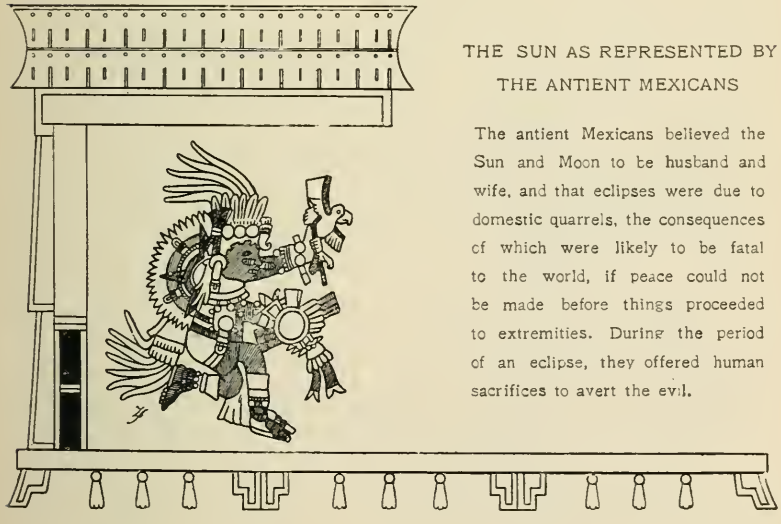

THE SUN AS REPRESENTED BY THE ANTIENT MEXICANS

The antient Mexicans believed the Sun and Moon to be husband and wife, and that eclipses were due to domestic quarrels, the consequences of which were likely to be fatal to the world, if peace could not be made before things proceeded to extremities. During the period of an eclipse, they offered human sacrifices to avert the evil.

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THE PLANET VENUS,
AS REPRESENTED BY THE
ANTIENT MEXICANS.

Venus was believed by the antient Mexicans to be the first created light, even before that of the sun. Tlavizcalpantecutli, the deity, who represented the planet Venus, was the god of the morning or the dawn. He was also the lord of the twilight or the approach of night and was held in great veneration. The antient Mexicans believed in the influence of the planets on herbs, which they supposed affected their action on the human body. Jalap, sarsaparilla and tobacco are stated to have been among the first plants used by the Mexicans in medicine.

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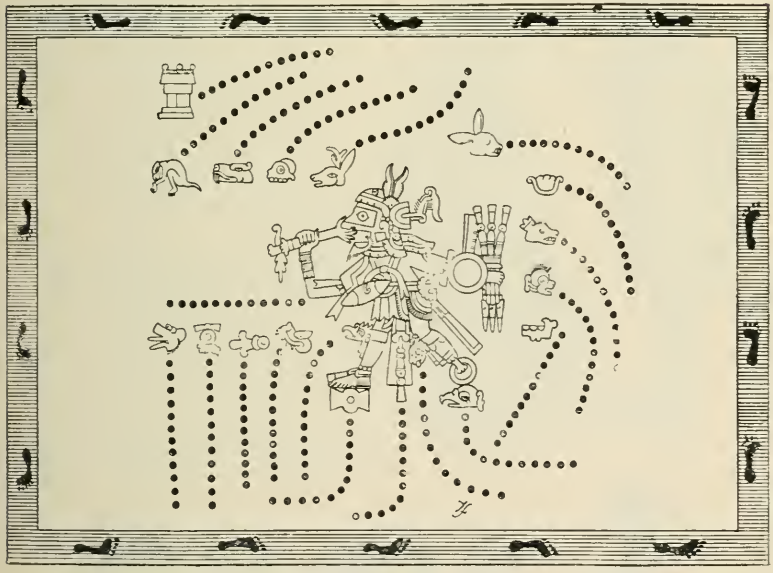

TEZCATLIPOCA

Tezcatlipoca was revered by the antient Mexicans as the great deity of wisdom and ruler of the planets. He was the mighty sage who worked magic on the life and health of mankind through the medium of the astrological signs with which he is here represented as surrounded.

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| | Per Cent. | | Per Cent. |
|---|---|---|---|
| Alcohol by weight | 41·00 | Acidity expressed as acetic acid | 0·033 |
| ,, by volume | 48·43 | Extractives | 0·69 |
| Equal to proof spirit | 84·87 | Mineral matter | Nil |
| Alcohol in volatile ethers | Two grammes per 10 litres. | | |

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| Alcohol (as proof spirit) | 86·5 | Acidity | ·036 |
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## A YEAR BOOK OF TREATMENT AND PRACTITIONER'S INDEX.

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|---|---|---|
| B. pestis .. .. .. | 34·0 | Lancet, 20th Aug., 1904 |
| B. choleræ (Koch) .. | 32·3 | Laboratory Report, King's College, Aug., 1904 |
| B. diphtheriæ .. .. | 20·0 | Journal of State Medicine, Jan., 1904 |
| B. typhosus .. .. | 11·0 | Journal of Royal Army Medical Corps, Mar., 1904 |
| B. dysenteriæ (Flexner) .. | 10·0 | Laboratory Report, King's College, Aug., 1904 |
| Staph. p. aureus .. .. | 9·3 | Public Health, Jan., 1905 |

* *Vide* "THE PRACTITIONER," Vol. lxix, No. 413, page 520.

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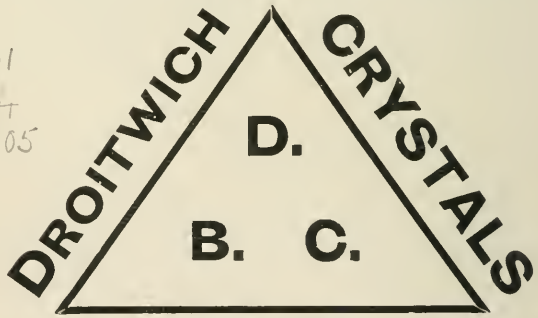


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# THE MEDICAL ANNUAL.

## *Part I.—The Dictionary of Materia Medica and Therapeutics.*

### REVIEW OF THERAPEUTIC PROGRESS, 1904,

BY

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### GENERAL REVIEW.

DURING 1904 no striking therapeutical discovery has been made. A large amount of clinical and laboratory work has been done, and there has been the customary output of new synthetic drugs. As a result, we are now the richer by several hypnotics, one of which, **Veronal,** seems likely to prove of considerable value; while **Isopral** and **Neuronal** have also been highly praised. **Theocin** is warmly recommended by various German observers, as a reliable diuretic; and **Hetralin,** a new urinary antiseptic, appears to rival urotropin.

Towards the end of 1903 some French writers directed attention to the retention of **Chlorides** in various renal conditions. Since then a large number of very interesting observations have been made. It appears that this retention is of clinical importance, since the amount of chlorides retained in the tissues has an influence on the production of œdema and serous effusions. Even in perfect health, excessive chloride ingestion may cause the tissues to retain considerable quantities of fluid, so that the body weight may rise. In certain diseased states this accumulation of fluid may show itself in the onset of dropsy, or increase of a pre-existing effusion. If in such a condition the ingestion of chlorides be arbitrarily cut down, the tissues are able to re-excrete their accumulated stores of chlorides, and rid themselves of the œdematous fluid; consequently it appears that wherever the excretory organs are unable to excrete chlorides readily, the chlorides of the dietary should be reduced as much as

possible. In the course of these investigations it was pointed out that the ordinary milk diet to a certain extent fulfils this requirement. Still it is quite possible to construct a diet-sheet which will give much greater variety of food, with, at the same time, a minimum consumption of chlorides. If in practice such diets are found to be unirritating for diseased kidneys, this will constitute a distinct advance, and will give us a welcome change from the monotony of a strict milk diet.

In Germany various Munich pharmacologists devoted considerable attention to the investigation of the peculiar inhibitory influence exerted by **Fluorescent Solutions** on various vital phenomena. At first this was supposed to be of the nature of a photo-dynamic action. Later investigations, however, have cleared up the question considerably, and it is now suggested that the action is really due to the formation of active oxygen.

It is interesting to note that there is a partial recrudescence of organo-therapy. In serum therapeutics the chief object seems to have been to discover new uses for the **Antistreptococcic Serum.** In certain infective conditions of the uterus, its action seems distinctly hopeful. One of the most notable advances of the year is the successful transmission of syphilis from human sources to various kinds of monkeys. Possibly this may in time give us an antitoxic serum.

## DICTIONARY OF REMEDIES.

**ACOIN.**

The composition of the hydrochloride of this new synthetic compound is $C\begin{matrix}(NC_6H_4OCH_3)_2\\NC_6H_4OC_2H_5\end{matrix}HCl$. It is a local anæsthetic similar in its action to, but less poisonous than, cocaine. A concentrated solution (6 per cent) has powerful caustic properties, and its watery solution keeps well if not exposed to the light. It has been strongly recommended for dental work[1].

REFERENCE.—[1]*Dental Cosmos*, Jan. 1904.

**ADRENALIN.**

Exner[1] observed that the intraperitoneal injection of adrenalin distinctly **Delays the Toxic Action** of drugs administered by the mouth. Meltzer and Auer[2] confirmed these observations in a paper read at the meeting of the Association of American Physicians at Washington, in May, 1904. When adrenalin is given to frogs they rapidly become paralysed. The action is on the central nervous system, since stimulation of the sciatic nerve still produces muscular contraction. The same effect was shown in rabbits. If 0·6 mgram of strychnine was injected, fatal tetanus was produced in from fifteen to twenty minutes; but if adrenalin was first injected there was no tetanic effect, owing to

the delayed absorption. The same delaying action could be shown when fluorescin was used. Injected subcutaneously into a rabbit, in a few minutes the conjunctivæ, mucous membranes, urine, and skin become stained a yellow colour. When adrenalin was given, the staining took considerably longer to develop, thus demonstrating delayed absorption. It was further proved experimentally that elimination was also retarded.

Hooker proposes to employ this action in the treatment of **Snake Bite.** He makes repeated subcutaneous injections of 8 drops of the solution of adrenalin of the strength of 1–1000.

It has been found that the addition of small quantities of adrenalin to cocaine solutions is an advantage in producing **Local Anæsthesia.** Braun[3] finds that the vascular constriction tends to check absorption, so that he is able to use a weaker cocaine solution. Three to five drops of an adrenalin solution, 1–1000, added to 100 cc. of a 0·01 per cent solution of cocaine, renders it as efficient as a 0·1 to 0·2 per cent solution of cocaine. A solution of cocaine (0·5 per cent), plus a little adrenalin, can be used for anæsthetizing large areas without danger, even if there be inflammation present. For dental purposes he dissolves 1 to 1½ ograms of cocaine in 1 to 2 cc. of salt solution, and adds 2 to 3 drops of adrenalin solution. Half is injected in front and half behind the tooth, which after five minutes, can be extracted without pain.

Foissy[4] confirms these statements, and says that the toxicity of a 0·05 per cent cocaine solution is much diminished by adding a 1–1000 solution of adrenalin in the proportion of 10 drops to 10 cc. At the same time the vaso-constricting and anæsthetic action is intensified. He has injected from 2 to 10 cc. in 149 cases of operations on the tonsils, without having ever observed a symptom of poisoning. Animal experiments showed that with the addition of adrenalin eight to fifteen times the ordinary toxic dose of cocaine could be recovered from.

Of great importance is the suggestion of Dönitz[5] to use the mixture of cocaine and adrenalin for producing **Spinal Anæsthesia.** His experiments on animals show that after subdural injection of 7 minims of solution of adrenalin (1–1000) cocaine may be injected into the spinal canal to the extent of a grain and a half, without causing any ill-effect, *i.e.*, five times the normal toxic dose.

Fenomenoff[6] finds that the action of adrenalin on the uterine and vaginal mucous membranes differs considerably. The vaginal mucous membrane does not react to the direct application of adrenalin. On the uterine mucous membrane and on that covering the portio vaginalis, the drug acts as a vaso-constrictor, checking hæmorrhage. Uterine polypi can be removed without bleeding. By means of experiments on rabbits, he was able to show that on the peritoneum the local application of adrenalin acted very markedly. He recommends it, therefore, as an excellent styptic when separating **Peritoneal Adhesions.**

Cramer[7] finds adrenalin very useful in gynæcology, in checking

hæmorrhage after curetting, and in the case of inoperable cancers. It is of great use to blanch the tissues before applying caustics. He does not recommend it in postpartum hæmorrhage. Bryant[8] found adrenalin (1–5000) applied on a large pledget of wool as an intra-uterine swab, successful in a severe case of postpartum hæmorrhage, in a woman who had recently suffered from purpura hæmorrhagica. The swabbing was followed by a douche of 1–20,000 adrenalin solution.

Francis[9] succeeded in arresting profuse hæmorrhage from the uvula in a case of hæmophilia by swabbing out the pharynx with a 1–1000 solution of adrenalin.

Grandelement[10] used instillations of adrenalin (1–5000) in an acute case of **Glaucoma**. The solution was applied every half hour for three days. It was found in animals that such instillations arrest the formation of the aqueous humor, and thus reduce intra-ocular tension.

Schlesinger[11] finds adrenalin very useful in controlling **Internal Hæmorrhage.** He used it with success in cases of hæmophilia, purpura, and bleeding from the intestinal canal, such as gastric ulcer, typhoid hæmorrhages, and neoplasms. The dose was 5–10–20 drops per os every hour, of a solution of 1–1000 of adrenalin. This amount causes no rise of blood-pressure or other unpleasant action. He was unable to get any good effect in hæmoptysis.

Moresco[12] finds adrenalin useful in complete **Paralysis of the Bladder.** He injects 150 cc. of a 1–50,000 solution of adrenalin every morning, leaving it in the bladder an hour or more. Gradually increasing the strength to 1–25,000, an improvement was noticed, and after the second week the bladder could be emptied spontaneously.

Several experimenters[13]—Josué, Erb jr. and v. Rzentkowski—state that they have seen **Atheroma** develop in animals after intravenous injections. The last-named observed cardiac hypertrophy and calcareous deposits in the aorta in rabbits.

References.—[1]*Arch. f. Exper. Path. u. Pharm.* 1903, Bd. 50, p. 315; [2]*Med. Rec.* May 14, 1904; [3]*Berl Klin.* 1904, H. 187; [4]*Trib. Med.* Dec. 12, 1903; [5]*Münch. Med. Woch.* 1903, No. 34; [6]*Therapeia*, 1904, No. 1; [7]*Deut. Med. Woch.* 1903, No. 29; [8]*Brit. Med. Jour.* May 28, 1904; [9]*Ibid*; [10]*Ther. Gaz.* May, 1904; [11]*Wien klin. Woch.* No. 11, 1904; [12]*Gaz. deg. Osped.* 1903, xxiv; [13]*Berl. klin. Woch.* No. 31, 1904.

**AGURIN.**

This is one of the newer theobromine preparations, intended to replace diuretin, a compound of theobromine and sodium salicylate. In agurin the salicylate is replaced by sodium acetate. It is claimed that this change does away with most of the unpleasant side-actions of diuretin, while the diuretic action is somewhat increased, since the acetate itself possesses diuretic properties, and the amount of theobromine contained in agurin is 10 per cent more than in diuretin.

The new compound has been favourably reported on by various observers. Roche[1], from observations made in Buchwald's clinic in Breslau, states that it is a powerful diuretic, singularly free from

unpleasant effects. He gives it as a rule in tablet form, and it was uniformly well borne, even when the administration was kept up for several weeks. The highest amount given in one day was 45 grains (3 grams), as a rule 21 grains was sufficient. The drug was very successful in cases of **Myocardial Degeneration** complicated with **Nephritis.** Good results were also obtained in uncomplicated cases of cardiac disease and nephritis. The only case in which it failed entirely was one of commencing cirrhosis of the liver.

Reference.—[1]*Deut. Med. Ztg.* 1904, No. 6.

**ALBUMIN.**

Credé[1] finds that *kalodal*, a new preparation of albumin, is suitable for subcutaneous administration. It is soluble in water, and can be boiled without coagulating. It causes but little pain or local irritation, while the tissues are able to assimilate it. Kalodal is prepared from meat, and consists of easily soluble albuminous substances, with traces of phosphates, iron, and sodium chloride. Dissolving readily in water, the solutions up to 10 or 12 per cent are quite fluid, but stronger percentages give rather too thick solutions, which tend to become gelatinous. The best solvent is physiological salt solution. The ordinary dose is 5 grams dissolved in 50 cc. of the saline solution. This may be directly injected from a syringe, or it may be added to 500 cc. of saline solution and run in from a funnel connected with two hollow needles. This amount equals the albumin of an egg. After the injection, the excretion of uric acid rises, and the urine may contain traces of albumin. Administration of larger amounts caused considerable albuminuria, showing that the tissues were unable to assimilate them. Practically it has been discovered that 5 grams every 6 hours is about the limit that can be assimilated.

In emaciated patients, who for some reason or other are unable to take food by the mouth, the albumin may in part be given by this method, and the remaining portion by rectal injection. In this fashion it may be possible to tide patients over critical days and dangerous operations. As a routine practice Credé always adds 50 cc. of the 10 per cent solution of kalodal to half a litre of saline solution, whenever it is necessary to administer a saline infusion. If this is injected slowly into parts where the skin and fasciæ are loose, little pain is caused, and the feeling of tension rapidly passes off. The kalodal may be kept ready in solution; a solution sterilized by boiling or exposure to steam keeps for months without decomposing.

Reference.—[1]*Münch. Med. Woch.* 1904, No 9.

**ALSOL.**

This is the acetic tartrate of aluminium, and has an action similar to the acetate of aluminium. It is soluble in water, forming a clear solution. Peck[1] has used it extensively in **Eye Disease,** in the concentration of $\frac{1}{4}$ to $\frac{1}{2}$ per cent. A fair disinfectant, it is also mildly

astringent. In the form of cold or hot compresses, he uses it along with other forms of treatment in acute granuloma, conjunctivitis, trachoma, and scrofulous ophthalmia, ulcers, etc. The compresses were kept on for 20 to 30 minutes three or four times a day.

REFERENCE.—[1]*Ther. Monats.* July, 1903; see *Brit. Med. Jour.* Oct. 31, 1903.

**ALUMINIUM ACETATE.**

This substance in watery solution is largely employed as an application in **Acute Eczema.** The official liquor aluminis acetatis of the German Pharmacopœia (strength 1–6) does not keep well, and deposits a gelatinous precipitate which reduces the activity of the preparation and at the same time renders it irritant for excoriated surfaces. Vorner[1] finds that the addition of boric acid to the solution prevents this change, while the activity of the solution as an astringent and antiseptic is not impaired. He suggests the following formulæ :—

1. Acid. boric. 0·25 ; liq. alum. acet. ad 100. Dilute ten times with water, and use as compress.

2. Acid. boric. 3·5 ; liq. alum. acet. ad 100. Use as in former case.

3. Liq. alum. acet. 100 ; saturated solution of boric acid (3·5 per cent) ad 1000. Apply as a wet dressing.

4. Liq. alum. acet. 100 ; aquæ 1000, acid. borici, quantum satis ad saturationem. Apply as a wet dressing.

REFERENCE.—[1]*Münch. Med. Woch.* No. 23, 1904.

**AMYL NITRITE.**

Hare[1] recommends the inhalation of amyl nitrite in the treatment of **Pulmonary Hæmoptysis.** He states that the action in arresting the bleeding is almost instantaneous, and he considers that this is brought about by the lowering of the pressure, in the same way as hæmorrhage stops naturally. Coughing raises the blood-pressure, causing a fresh hæmorrhage, and it is only when the pressure is so reduced by the loss of blood that coughing no longer is able to induce a reflex rise of pressure, that the bleeding ceases permanently. By inhaling amyl nitrite we can reduce the pressure sufficiently without loss of blood, so that the element of reflex rise of pressure from coughing is eliminated.

REFERENCE.—[1]*Aust. Med. Jour.* No. 2, 1904.

**ANTIPYRINE.**

Malherbe[1] reports the following rare mishap. A man, aged thirty, suffering from syphilis and migraine, was in the habit of taking antipyrine. He took on one occasion 23 grs. of the drug, and six hours afterwards was alarmed to find that the dorsum of his penis was of a dark bluish-black colour. On examining the organ, Malherbe found that there was intense congestion verging on ecchymosis. This gradually passed off. A similar case was reported by Fournier in 1899.

Löwy[2] reports two cases of **Antipyrine Rash.** The first case was

that of a man who had often taken antipyrine without harm, but once, after a small dose, he became collapsed, and developed a large erythematous rash, which in healing left some staining. The second case suffered from œdema of the face, lips and tongue. The mucous membrane was covered with blisters, and on the extremities large urticarial patches occurred.

REFERENCES.—[1]*Presse Méd.* No. 56, 1904; [2]*Arch. f. Derm. u. Syph.* 1 and 2, 1904.

**APLOPAPPUS BAYLAHNEN.**

This plant is indigenous to South America, and Chili, where it is used as a specific against **Dysentery.** Fingland[1] has used a fluid extract, which is a dark green, gummy fluid of a syrupy consistence, and not miscible with water. The dose is 20 minims thrice daily suspended in milk, cream, or freshly prepared almond emulsion. During the cure the diet must be carefully regulated, all fruit and vegetables are prohibited, and a diet of beef, mutton, fish, and light farinaceous food enjoined, with hot water and milk to drink. In three typical cases of dysentery Fingland obtained excellent results with this treatment.

REFERENCE.—[1]*Lancet*, Aug. 16, 1903.

**APOCYNUM CANNABINUM.**

Mendelsohn[1] states that Canadian hemp leaves are largely used in America and Asia, though almost unknown in Europe. They contain a poison which has a specific action on the heart, causing slowing of the pulse. It exerts less effect on the blood-pressure. It possesses diuretic properties, which are manifested on the following day after taking the fluid extract in doses of 10 minims twice or thrice daily. It seems to have no cumulative action, but very large doses occasionally cause unpleasant symptoms from irritation of the gastro-intestinal canal. The therapeutic indications are almost identical with those for digitalis. It can be used for stimulating and regulating the heart, and increasing diuresis in failure of compensation due to myocardial changes or valvular lesions. It has only a slight effect in kidney disease, and none in cardiac neuroses.

Robin[2] employed the fluid extract in 30 minim doses thrice daily, and finds it a useful adjuvant to diuretin. To prevent the patient becoming accustomed to the drugs, he gives them alternately.

H. C. Wood, jr.[3], in a preliminary report on the physiological action of the drug, points out that its action closely resembles that of digitalis. Injected into a vein it causes in a few minutes a very marked slowing of the pulse, and usually a great rise of pressure. The drug acts chiefly on the heart and vessels, since the rise in pressure occurs even if all connections with the vasomotor centre be destroyed by cutting the cord below the medulla. The heart, after excessive doses, is thrown into a state of permanent systolic spasm. The kidney vessels are

contracted, so that the diuretic action of Canadian hemp is probably due to its action on the circulation. The slowing of the heart is due to stimulation of the central inhibitory centres in the medulla, and is abolished by section of both vagi. Clinically the drug acts as a gastric irritant, causing a tendency to nausea and vomiting.

References.—[1]*Soc. de Thérap.* Mar. 9, 1904; [2]*Ibid*; [3]*Thér. Rev.* No. 3, 1904.

**ARGENTUM.**

Coblentz[1] comes to the conclusion that the organic silver compounds represent a real addition to modern materia medica. They are all less irritating than the nitrate, and therefore are better tolerated by the patient. Owing to the fact that they do not precipitate albumin and chlorides, they are enabled to penetrate more deeply into the tissues. In any one compound the actual percentage of silver present is of less importance than the special form in which it exists.

Petitjean[2], employing direct intravenous injections in dogs, finds that *argyrol* is less toxic than *protargol* and *collargol*. The latter in amounts of 0·02 cgrm. per kilo body-weight were as toxic as 0·5 cgram per kilo body-weight of argyrol. Death occurred without obvious lesion, and was probably due to some change in the blood.

Fluoride of Silver.—Under the trade name of *Tachyol* a 10 per cent solution of this compound is largely used in Italy as a reliable antiseptic. Jaja[3] praises its action in a severe case of **Small-pox**. He used it externally in dilution of 1–10,000, either as a spray or as a pack. The improvement was very rapid. The eruption remained vesicular, and there was no suppuration. The skin was not pitted. Similarly excellent results were obtained in erysipelas.

Collargol.—Baracz[4] has had the opportunity of treating three severe cases of **Anthrax** affecting the face and arm, with intravenous injections of a 1 per cent solution of collargol. He is satisfied that the injections did good. All the patients showed general symptoms, and the local processes were rapidly extending. After each injection the temperature fell after a slight rise. There was always a rigor after an injection. The amount injected was considerable, 10 to 30 cc. The technique is simple. The freshly-prepared collargol solution should be allowed to stand a little so as to allow the larger particles to sink down. Otherwise they will block the syringe.

Löbl[5] points out that where collargol, owing to any cause, cannot be given by the intravenous method, the rectal administration should be tried. After a cleansing enema, 0·15 to 0·30 gram in 75 cc. of water is injected. The results obtained were very good in three cases of severe sepsis, in puerperal fever, and in thrombo-phlebitis after typhoid fever. The injections had no action on the fever of phthisical cases.

Behr[6] has investigated the effect of administering collargol on the mixed bacilli which occur along with the tubercle bacillus in the sputum of phthisical patients. He finds that whether given by the

mouth or rectum, collargol distinctly diminished the number of streptococci and staphylococci in the sputum. He has noted this effect in 7 out of 10 cases.

In the meeting of the Société de Pediatrie[7] held on June 21, 1904, there was a discussion on the effect of collargol in **Diphtheria.** Guinon is very sceptical of the good effect of inunctions, but since he has begun to use intravenous injections, he has cured 5 out of 6 cases of very severe diphtheria. Netter, to whom is due the application of the drug in diphtheria, employs it as follows: Every child admitted with diphtheria receives, in addition to an injection of serum, an inunction of collargol. In severe cases the latter is repeated, and in very serious cases intravenous injections are given. The present mortality is 7·4 per cent as against 12·6 per cent with serum alone. The fatal cases also live longer, and in 1903 he succeeded in saving several cases with symptoms of bulbar paralysis. He considers that collargol has a double action—a direct antitoxic effect on the diphtheria toxin, and also an antidotal action on the poisonous products resulting from the action of the toxins on the organism. It has thus an action when the serum fails to cure.

Urosanol.—This is a compound of protargol with gelatin. It is made in three strengths, *viz.*, 1, 3, and 5 per cent. It is put up in small tubes, and becomes fluid at the body temperature. The dose for urethral injection is 2½ cc. Schaff[8] finds this combination clean, active, and non-irritating. It acts partly as an antiseptic, partly as an astringent, and partly as an anti-catarrhal. He has treated 30 cases of **Gonorrhœa,** mostly with the 3 and 5 per cent preparations. The discharge rapidly ceases, but is apt to recur if the treatment is stopped too soon. The discharge ceases sooner in robust individuals than in those reduced in health. It seems to be checked in from three to five days in the former class. In very acute inflammatory disturbance he commences the treatment with 1 per cent injections of potassium permanganate, before proceeding to the use of the 1 per cent urosanol. Urosanol has given him better results than any other preparation.

References.—[1]*Ther. Gaz.* Aug. 15, 1903; [2]*Clin. Ophth.* Oct. 10, 1903; [3]*Il Morgagni*, Dec. 1903; [4]*Arch. f. klin. Chir.* Bd. lxx, Hft. 2; [5]*Centr. f. d. ges. Ther.* March, 1904; [6]*Wien. Med. Runds.* No. 29; [7]*Münch. Med. Woch.* No. 30; [8]*Ther. Monats.* July, 1903; *Brit. Med. Jour.* Nov. 28, 1903.

**ARISTOCHIN.**

This substance is a derivative of quinine, and has been recommended by Baum[1] as a specific for **Malaria.** It also possesses a slight antipyretic action in certain forms of fever. It is a fair analgesic in periodical neuralgia. The analgesic effect is rapidly produced, but does not last long. The dose is 7 grains, given three times, three, two, and one hour before the attack is expected to come on. As it is insoluble in the saliva, aristochin has no taste, and gives rise to no unpleasant gastric disturbance.

Reference.—[1]*Die Heilk.* Jan. 1904, see *Brit. Med. Jour.* April 2, 1904.

**ARSENIC.**

Biernacki[1], from an investigation of 15 cases, finds that the prolonged exhibition of small doses of arsenic causes no improvement in the blood, but rather produces an ill effect on the composition of the blood in true chlorosis and anæmia. In a certain number of cases the general tonic action of the arsenic was produced. The patients expressed themselves as feeling in better general health, although the actual composition of the blood had deteriorated.

For acute arsenical poisoning, the most generally used antidote is freshly prepared hydrated oxide of iron, made by acting on a fresh solution of ferrous sulphate with magnesium oxide. Strzyzowski[2] has tested 41 samples of magnesium oxide, and found that no less than 26 of them contained arsenic varying from 0·1 to 0·5 mgram per cent of $As_2 O_3$. Though these amounts would not have any deleterious action as a poison, still, from a forensic point of view, the presence of this arsenic must be remembered in testing stomach washings from suspected cases of poisoning.

References.—[1]*Wien. Med. Woch.* No. 25–27, 1904; [2]*Münch. Med. Woch.* No. 23, 1904.

**ATROPINE.**

Stalberg[1] reports a case of intoxication with atropine sulphate, in which there was, in addition to the ordinary symptoms, marked frequency of micturition and the absence of any rise of temperature.

Reference.—[1]*Amer. Jour. Med. Sci.* March, 1904.

**BARIUM CHLORIDE.**

Tabora[1] has used barium chloride in 36 patients afflicted with various diseases. The daily dose is 1½ to 2½ grs. and this amount is given for two days. The blood-pressure is invariably increased, the rise varying from 15 to 58 mm. of mercury. The action begins within four hours, reaching a maximum in twenty-four hours, and taking several days to pass off. The pulse is slowed. In some cases it acted as a diuretic. Slight **Dyspnœa** and **Œdema** are removed, but graver conditions are not affected. Barium chloride can be used in slight cases of **Cardiac Insufficiency,** whether due to valvular or muscular changes, especially if associated with low arterial tension. It is not so powerful as digitalis, and is useless where digitalis fails. It is not of much use in nephritis, but is useful in **Pneumonia** and other conditions where the arterial tension is lowered from central vasomotor paralysis.

Reference.—[1]*Deut. Med. Woch.* p. 700, 1903; *Ther. Rev.* No. 3, 1904.

**BENZOATE OF LITHIUM.**

According to all investigators, it is the deposition of calcium carbonate and phosphate in damaged corneal tissue which leads to the resulting **Opaque Nebulæ.** The calcium salts come from the tears. Mazet[1] has attempted to clear up the deposits by the use of irrigations of

lithium benzoate. He employs a 2½ to 10 per cent solution, and instils one drop two or three times in the day. This causes slight burning and itching, which rapidly pass off. The results obtained in certain cases are extremely good, and far surpass other methods of treatment.

REFERENCE.—[1]*Cent. f. d. ges. Ther.* March, 1904.

**BIOSIN.**

This is a new albuminous preparation, made from casein, yolk of egg, and an organic iron compound. It contains albumin, iron, and lecithin. It is a fine powder, without odour, of a pleasant taste, and which dissolves in water. Heim[1] has tried the preparation in over 100 cases. The best method of administration is to give at each meal 20 to 30 grams dissolved in water, and sweetened to taste. Biosin is well borne, does not upset the digestion, and the appetite is stimulated. The body weight rapidly increases, and in **Anæmic** states the blood improves as regards corpuscles and hæmoglobin. The good effect is also well shown in **Exhaustion,** and nervous or **Neurasthenic** states. The preparation is cheap, costing only 6 marks per kilogram.

REFERENCE.—[11]*Berl. klin. Woch.* No. 22, 1904.

**BIRCH LEAVES (Infusion).**

This preparation was introduced as a diuretic, but its action is feeble. Jænicke[1], who has used it for the past four years, finds that it possesses a distinct solvent action on **Renal Calculi.** He mentions particularly a case where the stone was revealed radioscopically, and dissolved up under the birch infusion. The leaves are collected at the commencement of summer, dried and powdered. A teaspoonful is infused with boiling water (8 oz.) for five minutes. The infusion is taken in the morning (on an empty stomach), and in the afternoon. (*See also* CALCULUS, RENAL.)

REFERENCE.—[1]*Cent. f. d. ges. Ther.* June, 1904.

**BORIC ACID.**

Boric acid and borax have a certain action in **Reducing Weight.** Neither substance, however, is well borne. Seng[1] observed their effects on six patients, adding borax or boric acid to the diet, without in any way modifying it or making any change in the ordinary mode of life. In some cases it caused loss of appetite and nausea; in others diarrhœa, palpitation, and oppression of the head followed the use of the drugs. They should, therefore, be given only in small doses, which may be gradually increased to 15 to 20 grs. in the day.

REFERENCE.—[1]*Ther. d. Gegenw.* April, 1903; *Treatment,* Aug. 1903.

**CAFFEINE.**

Legendre[1] points out that in many instances where **Venesection** is indicated, the blood only flows slowly from the vein owing to feeble cardiac action. An injection of caffeine rapidly removes this difficulty, which is most likely to occur in cases of pulmonary œdema, and of

failing heart in Bright's disease. It is well in such cases to make a preliminary injection of caffeine five minutes before carrying out the venesection.

REFERENCE.—[1]*Presse Méd*, 1903, No. 89.

**CALCIUM.**

Gley and Richaud[1] recommend the use of small doses of calcium chloride when it is desired to increase the **Coagulability of the Blood.** Large doses reduce the coagulability. As it is difficult in any individual case to state what amount will increase and what will reduce the coagulability, they do not ascribe much therapeutic value to the drug in actual practice. They further state that any influence that gelatin may exert in the blood is due to the presence of minute traces of calcium. On the other hand, many samples of gelatin contain albumoses, which interfere with the coagulative properties of the blood, so that it also is an unreliable remedy.

Boas[2] recommends rectal injections of 20 cc. of a 10 per cent solution of calcium chloride for **Bleeding from Piles.** The injection is made with an ordinary rectal syringe after the bowels have acted in the morning. The injection should be retained. In severe cases the procedure may be repeated at bed-time. The injection only acts against the bleeding, and has no direct effect on the hæmorrhoids. It should be kept up for a long time after the bleeding has ceased, *e.g.*, for a month, daily injections, and then two or three weekly. They cause no pain or irritation.

REFERENCES.—[1]*Presse Méd.* April 20, 1904; [2]*Ther. d. Gegenw.* No. 7, 1904.

**CAMPHOR.**

Koch[1] recommends subcutaneous injections of camphor dissolved in olive oil in **Phthisis.** They reduce the temperature, check night-sweats, and improve the general condition. The sputum is at first increased, but is more readily brought up. For early stages inunctions of camphor may also be employed.

REFERENCE.—[1]*Berl. klin. Woch.* May 2, 1904.

**CHLORETONE.**

Hutton[1] finds this drug very useful in the **Vomiting of Pregnancy.** Out of six cases one was a complete failure, but in the remainder the action of chloretone was distinctly beneficial. He employs doses of 3 grs. given in cachets, or a tablespoonful of a saturated watery solution. The first two or three doses are taken at intervals of twenty to thirty minutes, and subsequently at longer intervals, depending on the sensations of the patient. As a rule three doses are sufficient. Chloretone is also useful in the sickness accompanying menstruation. In **Sea-sickness** he has found it a reliable drug, and also for the relief of pain in the stomach. It acts by rapidly benumbing the terminations of the sensory nerves in the stomach. He has not obtained good

results with chloretone as a hypnotic. It often failed to produce sleep, and leaves headache and bad taste in the mouth next morning.

REFERENCE.—[1]*Liver. Med. Chir. Jour.* Jan. 1904; *Ther. Gaz.* July, 1904.

**CHLORIDES.**

A large amount of work on the effect of the chlorides contained in the diet has been done by numerous French observers. Their results have shown that even in health the chlorides exert a certain influence, while in various diseased conditions of the liver, kidney, and heart, the question of the quantity of chloride to be allowed becomes of considerable importance.

Widal and Javal[1] published a paper dealing with the effect of altering the quantity of chloride contained in the diet. Their experiments were carried out on patients suffering from various forms of **Kidney Disease.** Particular attention was directed to the changes produced as regards the degree of œdema and the amount of the albuminuria. They found that in interstitial nephritis, even large doses up to 10 grams (150 grs.) did not produce œdema. The effect was quite different in the case of three patients afflicted with desquamative nephritis. Here the exhibition of similar quantities of salt caused marked œdema in two of the cases. Their next step was to study carefully the effect of varying the amount of the chlorides in the diet of a patient with epithelial nephritis. They found that the chlorides were not all excreted, but tended to become retained in the body. At the same time the retained salt seems to collect round it and retain the tissue-water, giving rise in this fashion to œdema. So marked is this relationship, that they were able to increase the body-weight by giving chlorides freely, owing to the resulting increase in the œdema. On the other hand, the effect of withholding chlorides from the diet was to draw upon the reserve store of chlorides in the tissues. As these reserves were used up the œdema disappeared. Widal and Javal have shown that the same phenomenon occurs in healthy people. The hydration of the body runs to some extent parallel to the amount of chloride retention. Thus by changing three men very abruptly from a diet extremely rich in chlorides, to one very deficient in chlorides, they were able to reduce the body-weight by as much as 2 kilos. At the same time they observed that the output of chlorides exceeded the ingestion. Apparently the body is able to absorb as a temporary constituent a certain amount of water, and the determining factor is in part the presence or absence of chlorides. It is evident that the chlorides can materially alter the excretions. They also exert an influence on the amount of albumin passed in the urine. The albumin ratio follows pretty closely the chloride curve. It is evident, therefore, that in certain forms of **Bright's Disease** the amount of chloride ingested in the diet is of considerable importance. Generally speaking, the amount in the

diet should be restricted. The well-known benefit of a milk diet is, they hold, essentially due to the fact that this diet contains only small amounts of chloride. Thus the patient in question, while in an œdematous condition and passing large quantities of albumin, was put upon a strict milk diet. The excretion of the chlorides in the urine rapidly rose, and the excretion exceeded the ingestion. With this increased excretion the œdema disappeared, and the albuminuria improved rapidly.

The most important result of these experiments lies in the discovery that the dietary of nephritic patients can be materially altered. Meat is no longer tabooed ; it may be given even in acute forms of Bright's disease, provided that in cooking it a minimum of chloride be used. Normally, on an average diet, about 10 grams of chlorides are taken in the day. On a strict milk diet this amount falls to about 5 grams, and it is chiefly on this account that milk diet is so useful in nephritis. It is possible to reduce the quantity of chloride in the milk still further by limiting the chloride consumption of the cow, as many farmers are in the habit of adding salt to the cow's food. Meat contains only small quantities of chlorides, so that it is in this respect suitable for the diet of patients suffering from epithelial nephritis. Ordinary bread contains a fair quantity of chloride, but by using no salt in baking, the bread can be rendered more suitable for kidney sufferers. They insist that in certain stages of nephritis the best form of treatment is the exclusion of salt from the diet. The actual nature of the food is much less important than its richness in chlorine. By a suitable arrangement it is possible to give a varied diet containing only small amounts of chloride.

For purposes of comparison it may be well to introduce here a table showing the relative value in chlorides of different foodstuffs :—

*Milk* contains about 1·6 grams of NaCl in a litre, so that it is fairly rich in chlorine.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Bread* | - | 500 | grams | contain | approximately | 0·10 | grams | of NaCl. |
| Flesh | - | 300 | ,, | ,, | ,, | 0·35 | ,, | ,, |
| Egg | - | 1 | ,, | ,, | ,, | 0·10 | ,, | ,, |
| Fresh Legumes / Fresh Fruit | | 500 | ,, | ,, | ,, | 0·30 | ,, | ,, |
| Potatoes | - | 500 | ,, | ,, | ,, | 0·20 | ,, | ,, |

The following are some suggested dietaries which contain only small quantities of chlorides :—

WIDAL :

| | | | | | | |
|---|---|---|---|---|---|---|
| (*a*) Potatoes | - | 1000 grams | (*b* | Bread (without salt) | - | 500 grams |
| Raw Meat | - | 400 ,, | | Raw Meat | - | 480 ,, |
| Sugar | - | 200 ,, | | Sugar | - | 100 ,, |
| Butter | - | 20 ,, | | Butter | - | 80 ,, |
| Tisane | - | 2500 ,, | | Tisane | - | 2500 ,, |

Each of these contains about 1·50 grams of NaCl, or about the same as a litre of milk.

ACHARD and PAISSEAU:

| | |
|---|---|
| Beef boiled and steeped in vinegar | 500 grams |
| Potatoes with oil and vinegar | 500 ,, |
| Sweetened Rice | 50 ,, |
| Tisane | 2500 ,, |
| Sugar | 120 ,, |

This contains about 3 grams NaCl.

Similar observations have been made by numerous other investigators. Ambard and Beaujard[2] have shown that there exists a relationship between the blood-pressure in Bright's disease and the retention of chlorides. By increasing the chlorides the blood-pressure rises. Laufer[3] confirmed and extended these observations. Nobécourt and Vitry[4] tested the effect of adding chloride to the diet of infants. Experimenting with children of from twelve days to four months, they find that the addition of salt increases the weight as against control children. They suggest that this may be of use clinically in the case of weakly children tending to atrophy. For infants under weight, small quantities of salt should be added to the milk in the proportion of 1 gram for each 100 of body-weight. The same authors, in the case of two children of ten and fourteen suffering from tubercular peritonitis, showed that the chlorides had an influence on the dropsy. On Widal's diet (*a*, see above) the ascites diminished notably.

Olmer and Audibert[5] state that a diet poor in chlorides has a palliative action tending to restrain the accumulation of fluid, whereas chlorides in large amounts have a deleterious tendency, favouring the increase of dropsy, and thus interfering still further with the circulation. Courmont[6] reported a case of hypertrophic **Cirrhosis of the Liver,** which was treated successfully by tapping, and a diet poor in chlorides. Chauffard and Boidin[6] have shown that in certain stages of **Pleurisy** the administration of large quantities of chlorides has a bad effect, both on the general condition and on the effusion.

Vaquez and Laurent[7] state that a diet rich in chlorides is, generally speaking, bad for a cardiac case at all stages, whether the compensation be sufficient or not. The bad results are either general or local. General disturbance results in: (1) The appearance of œdema, or rather exaggeration of œdema pre-existing; (2) General functional disturbance, dyspnœa, vomiting, sleeplessness. The elimination of large quantities of chlorides may increase a pre-existing albuminuria, or cause its appearance. Similarly in the condition of asystole, when the acute manifestations have somewhat subsided, the patient can be allowed to give up his milk diet and go on a general diet which contains meat, butter, eggs, etc., but no chlorides. In the terminal stages of chronic **Vascular disease**[8], when the heart fails to respond to drugs, a diet without chlorides enables us to keep up the patient's strength better.

Cantonnet[9] proposes to employ osmotic treatment along with iridectomy in **Glaucoma.** Glaucomatous cases may be divided into those in which the kidneys are permeable to chlorides, and those in which chlorides are retained in the system. The former class he treats by putting on a diet containing minimum quantities of chlorides, and the latter by giving large quantities of chlorides to induce polyuria. In the latter class, of 15 cases, 10 showed marked improvement (the vision improving, *e.g.*, from $\frac{1}{100}$ to $\frac{1}{14}$, from $\frac{1}{50}$ to $\frac{1}{30}$, from $\frac{1}{6}$ to $\frac{1}{5}$, etc.) In three cases the result was bad. The first class of four cases treated by restricting the chlorides all showed improvement, especially as regards the pain.

Greidenberg[10], as the result of observations made on 36 patients, warmly recommends injections of physiological salt solution in **Mental Disease.** They cause increase of appetite, better sleep, and exert a sedative action in mental and motor excitement. They are indicated more especially in mental conditions due to toxic or autotoxic origin.

References.—[1]*Presse Méd.* June 29, 1903; *Treatment,* Aug. 1903; [2]*Soc. de Biol.* Feb. 12, 1904; [3]*Ibid,* Feb. 27, 1904; [4]*Rev. d. Malad. de l'Enf.,* March, 1904; [5]*Rev. de Méd.* March, 1904; [6]*Soc. Méd. Hôp. de Lyon.* Jan. 26, 1904; [7]*Trib. Méd.* p. 360, 1903; [8]*Bull. Gén. d. Thér.* Mar. 8, 1904; [9]*Arch. d.'Ophth.* in *Bull. Gén. de Thér.* June 30, 1904; [10]*Vratch,* No. 5, 1904.

## CHLORINE.

Stewart[1] claims that the best disinfectant for the hands consists of four teaspoonfuls of calx chlorinata in one quart of sterile water containing two teaspoonfuls of acetic acid. Five minutes' scrubbing with this solution after five minutes' cleansing, has always prevented growth in cultures made after intentional inoculation of the hands with streptococci, staphylococci, and the *bacillus coli communis.* In antiseptic power the solution is equal to a solution of 1–500 of corrosive sublimate.

Reference.—[1]*Amer. Jour. Obst.* Jan. 1904.

## CHLOROFORM.

Trillat[1], in a paper read to the Soc. de Thérap., comes to the following conclusions: Whatever the source of the chloroform, simple rectification gives a chemically pure substance. It is impossible to establish any difference between the chloroform obtained by acting with chlorine on alcohol, and that made from chloral decomposition. The nature of the impurities which are produced in different kinds of chloroform are always of the same kind. Considering the facility with which chloroform undergoes catalytic changes, one must admit the hypothesis that even during the act of chloroforming, toxic chlorine products may be formed.

Reference.—[1]*Bull. Gén. de Thér.* June 23, 1904.

## CHRYSAROBIN.

Hrach[1] reports the onset of **Pyæmia** in a patient who for a month was treated by inunctions of chrysarobin ointment for **Psoriasis.**

Two patches became irritated, and suppurated, and absorption led to pyæmic manifestations. The patient had rigors, pleurisy, nephritis, endocarditis ; and multiple abscesses came out in crops on the skin. He eventually recovered.

Reference.—[1]*Wien. Med. Woch.* July 11, 1903.

**CREOSOTE (Carbonate of).**

Scott and Montgomery[1] report 67 cases of **Pneumonia** treated in the Philadelphia Polyclinic and Pennsylvania Hospital by this drug, with 10 deaths, equal to a mortality of 14·9 per cent.

Reference.—[1]*Ther. Gaz.* Jan. 1904.

**CRURIN.**

This preparation, a chinolin rhodonate of bismuth, has been used for treating **Ulcers.** Stern[1] speaks favourably of the action of a glycerin emulsion in **Gonorrhœa.** For injection, crurin pnrissimum (which contains no starch) should be used. One gram is made into a paste with water and glycerin, of each 5 grams, and then distilled water is added to 200 cc. This solution is unirritating, and has astringent properties, while it rapidly kills off the gonococci.

Reference.—[1]*Deut. Med. Woch.* March, 1903 ; *Brit. Med. Jour.* Jan. 9, 1904.

**CYPRESS OIL.**

Soltmann[1] finds this drug excellent in **Whooping Cough.** An alcoholic solution of the oil (1–5) is made, and of this 2 to 3 drs. are sprinkled on the bed-cover, pillow, and linen of the patient, four times a day. Under this treatment the paroxysms are fewer, last a shorter time, and are not so exhausting. The actual duration of the disease does not seem to be reduced.

Reference.—[1]*Ther. d. Gegenw.* March, 1904.

**DIGITALIS.**

Cloetta[1] claims to have produced in small quantities an amorphous form of digitoxin. Contrasted with the crystalline variety, the amorphous form is similar in chemical constitution and therapeutic activity, but is much more soluble in water, and is also more diffusible in dialysation experiments. The local irritant action is much reduced, so that *digalen*, as the new preparation is called, can be used either by the mouth, rectum, or by injection into the veins or subcutaneous tissues. Hoffmann, La Roche & Co., of Basle, market the preparation in small bottles containing 0·3 mgram of the soluble digitoxin in each cc. The ordinary dose is 0·3 mgram, and the maximum amount to be given in the twenty-four hours is 1·2 mgram. Kottmann in Naunyn's clinic has used this preparation for upwards of a year with good effects.

Crile[2], investigating the effect of digitalis in animals suffering from induced shock, finds that the drug has no very marked beneficial action. The animals treated with digitalis did not live any longer than the controls, and in many cases death was more sudden than in

the controls. After the heart had ceased to beat, digitalis, whether introduced by intravenous infusion or injected directly into the chambers and walls of the heart, had no appreciable effect in re-establishing the circulation.

REFERENCES.—[1]*Münch. Med. Woch.* No. 33, 1904; [2]*Amer. Med.* April 23, 1904; *Ther. Gaz.* June, 1904.

**DIONIN.**

Dionin, ethyl-morphine hydrochloride, has been extensively used as a respiratory sedative. Hinshelwood[1] finds that it has a marked action as an **Analgesic for the Eye.** He uses a 5 per cent aqueous solution, or where there is much lacrymation, an ointment of a similar strength. For slight degrees of pain a 2 per cent solution is sufficient. Dionin does not affect the sensibility of the cornea; the lightest touch is still felt, hence it has no value as an anæsthetic. Its action is in deep-seated inflammatory pain from iritis, glaucoma, iridocyclitis, ulcer, or inflammation of the cornea. In such cases its soothing action is much stronger and more lasting than that of cocaine. Instillations of dionin always soothe, and sometimes completely allay the pain for several hours. The analgesic power of dionin is much greater than that of cocaine, and is greater even than that of holocaine. Sometimes after the first or second instillation it causes intense chemosis of the conjunctiva, but this rapidly passes off and need cause no alarm. It does not reappear on subsequent use. It only follows the use of 5 per cent solutions, and never occurs with weaker strengths. The drops or the ointment may be used every four, six, or eight hours, according to the severity of the pain and the effect produced.

Darier[2] says that the application of dionin is painful, hence the instillation should be progressive; at first 1 drop of a 2 per cent solution, then after ten minutes 2 drops of a 5 per cent solution. If a very lasting anæsthesia or profound revulsive action is required, inject the drug under the conjunctiva. He uses these injections of $\frac{1}{6}$ to $\frac{1}{3}$ grain to cause **Replacement of the Retina.** The result is very marked, a violent reaction with tumefaction and chemosis being produced. The lacrymation and excessive exudation serve to wash out the parts in cases of **Chronic Conjunctivitis.** For acute or subacute **Glaucoma** the author, for one or two hours before operating, uses dionin. After cataract he used the drug on the third or fourth day; but for corneal operations he applies dionin immediately, especially if there be infiltrated zones present. Corneal infiltrations, diffused, recent, and not very deep, are rapidly absorbed under dionin.

Rahn[3] recommends the use of dionin either alone or with morphine. The effect of morphine is increased by the association of a little dionin, either as a narcotic or as a sedative for irritant cough. Thus if two doses of 2 to 3 cgrams ($\frac{1}{3}$ to $\frac{1}{2}$ grain) of dionin are given six and three hours respectively beforehand, $\frac{1}{2}$ to $\frac{3}{4}$ cgram ($\frac{1}{12}$ to $\frac{1}{8}$ grain) of morphine

will act as a narcotic and induce sleep. For irritant cough the amount of morphine may be reduced to a minimum of 1½ to 2 cgrams of dionin, to be given six times a day. Dionin alone in doses from 2 to 4 cgrams (⅓ to ⅔ grain) is useful in dry **Cough, Asthma,** in nervous and atonic stomach conditions, in **Cachexia** and **Neurasthenia,** and as a sedative for children.

REFERENCES.—[1]*Brit. Med. Jour.* April 30, 1904; [2]*La Clin. Ophthal.* Jan. 23, 1904; [3]*Therap. Monats.* May, 1904; see *Brit. Med. Jour.* June 13, 1904.

**DYSPEPTINE.**

This is the name given to the natural gastric juice of the pig, obtained by implanting the lower end of the œsophagus into the duodenum and then forming a gastric fistula. On feeding the animal the gastric juice is poured out of the fistula. If kept in a cool place it remains unimpaired for months. Mayer[1] has used it in doses of 15 cc. (½ oz.) thrice daily with great success in all forms of chronic **Gastric Catarrh** with diminished secretion of hydrochloric acid. Within a few days the appetite increases, the subjective symptoms disappear, and free hydrochloric acid reappears. Treatment lasted from five to seven weeks, and, on stopping the dyspeptine, there was no recurrence of symptoms. The preparation is particularly valuable in **Phthisis,** since it causes increase of appetite and stimulates the digestive powers. As regards dosage, in chronic gastric catarrh with absence of free HCl, and in dilated stomach, the best dose is 15 cc. during and after each meal. For stimulating the appetite 10 to 15 cc. half an hour before food is sufficient.

Other writers[2] do not agree with these claims. Schütz could not discover any therapeutic effect, and Erb, investigating the chemical composition, comes to the conclusion that the preparation is of no value. It is faintly acid, but the acidity is not due to free hydrochloric acid. There is a little pepsin present, but the juice has no digestive action on boiled white of egg. Even after the addition of free hydrochloric acid, the digestive action is very slowly developed. He thinks that the preparation is not a normal gastric jnice, but so-called pathological gastric juice, such as follows an injury to the vagus. After such injuries the secreted juice contains no free hydrochloric acid, and only a small quantity of pepsin, as is the case in dyspeptine.

Loeb[3] has also investigated this preparation, and finds it absolutely without any action. He finds that it contains no free hydrochloric acid, and possesses no power of digesting proteid.

REFERENCES.—[1]*Ther. d Gegenw.* Dec. 1903; [2]*Münch. Med. Woch.* No. 32, 1904; [3]*Deut. Med. Woch.* No. 11, 1904.

**ELECTRO-MAGNETS.**

Cohn[1] has performed a series of experiments with a new form of electro-magnet prepared by Trüb. He considers that a therapeutic action has not been established. In a large number of cases absolutely no effect was produced, while in the cases affected only subjective

improvement was obtained, and never objective changes in the signs. It seems, therefore, doubtful whether this action was not of the nature of suggestion.

REFERENCE.—[1]*Berl. klin. Woch.* No. 15, 1904.

**EPIDURAL INJECTION.**

Subdural injections of cocaine are recommended by Roussy[1] for relieving pain of **Acute Gonorrhœal Epididymitis,** which resists other treatment. Of 34 cases thus treated, one injection gave permanent relief in 23 cases ; other 4 cases got relief on the following day, while only 6 cases required renewed injection. The strength of cocaine employed was 1 per cent, and 3 to 4 cc. (up to 1 dr.) were injected. low down in the spinal canal, to allow the drug to act on the unprotected nerve roots. The injections only relieve pain, and have no influence on the course of the gonorrhœa.

Cathelin[2], as the result of 2000 observations with lumbar injections, comes to the conclusion that they are chiefly indicated for **Incontinence of Urine,** and for pain situated at a level below the mammæ.

Kapsammer[3], using epidural injections of physiological salt solution, in 20 cases of incontinence of urine, cured 15 cases and improved the other five. The amount injected was large, from 10 to 40 cc. The only inconvenience caused was transient pain in the legs. In severe cases large injections are required, and the enuresis only ceases on the night of injection at first, but with each succeeding injection the effect is prolonged. The injections must be repeated, say thrice in the week, and then stop to see the effect. Under aseptic precautions the injection is made at the level of the line joining the iliac crests. The needle is introduced at an angle of 60 degrees. and pushed home till it impinges on the anterior wall of the canal. The needle is then slowly pushed down, and the injection is gradually given.

REFERENCES.—[1]*Trib. Med.* Jan. 9, 1904 ; [2]*Presse Méd.* 1904, No. 25 ; [3]*Arch. f. Kinderh.* Bd. 38.

**ERGOT.**

Ergot contains three active substances differing in their action : (1) Ergotinic acid, a nitrogenous glucoside ; (2) Sphacelinic acid, a nitrogen-free resin ; (3) Cornutin, an alkaloid.

*Ergotinic acid* is highly irritating, causing marked inflammatory reaction at the site of injection. Owing to its presence in most of the fluid preparations of ergot, it frequently causes abscess and inflammation. After absorption it acts as a general depressant to the nervous system. It is rapidly decomposed in the stomach, and is rendered inert.

*Sphacelinic acid* is probably the most active principle for therapeutic use. It is supposed to cause the blackening and gangrene of peripheral parts, as can be well shown in the cock's wattle. The gangrene is due to local constrictions interfering with the blood supply, and to

the formation of thrombi of hyaline material secreted by the walls of the vessels under the action of the drug. It causes a marked general constriction of the blood-vessels, increasing the reflex activity of the spinal cord, hence producing abortion in pregnant animals. It also acts directly on the muscle fibres of the uterus.

*Cornutin* aids sphacelinic acid in producing the desired therapeutic action. It is a strong stimulant of the central nervous system, and the blood-pressure may rise from its action on the vasomotor centres. It also causes peristaltic movements in the uterus and intestines, but the amount of cornutin contained in ergot is small, and therefore its action is unimportant. By percolating the drug with suitable menstrua and throwing out by appropriate precipitants the undesired constituents, Houghton claims[1] to have produced a sterile, non-irritating preparation when given internally or subcutaneously. It is much less toxic than the official preparations, but is physiologically active, causing blackening of the combs and wattles of cocks, and producing abortion in pregnant animals.

REFERENCE.—[1]*Ther. Gaz.* July, 1903.

**ESERINE.**

Arndt[1] has used this drug in cases of **Intestinal Paralysis** after abdominal operations. He injects subcutaneously 0·001 gram, and, if necessary, repeats this dose. He has never observed unpleasant effects, and reports five cases where the treatment was successful.

Arndt[2] further points out that in a certain number of cases physostigmine has no effect on the meteorism. This is common in women who have been operated on in Trendelenburg's position, in which cases the meteorism is frequently combined with gastric distension. Physostigmine has no action on the dilated stomach; and Arndt recommends in such cases to combine washing out of the stomach along with eserine for the intestinal condition.

[1]REFERENCES.—[1]*Centr. f. Gynäk*, No. 9. 1904; [2]*Sem. Méd.* No. 10, 1904.

**ETHYL BROMIDE.**

This drug is going out of favour. It has caused several deaths, and is probably more dangerous than chloroform. It occasionally causes violent excitement during the first part of the administration, and on waking there may be further excitement.

Taptes[1] recommends the use of a special chair to keep the patient quiet. Bloch[2] has used the drug to produce general anæsthesia in eleven cases. The anæsthesia is very rapidly produced, and is very short. He gives it in an Esmarch inhaler.

REFERENCES.—[1]*Ann. d. Mal. de l'Oreille*, xxix, 1903; [2]*Ther. Gaz.* xxvii, 1903.

**ETHYL CHLORIDE.**

Allen[1] reports a death under this drug in a case in which it was used to induce general anæsthesia. Lotheisen[2] found but one

authentic case of death in 12,000 administrations. Davis[3] and Berlioz[4] speak very highly of the drug. If ½ to 1 drachm be poured on a compress of gauze and air be excluded, narcosis occurs in from thirty to forty seconds and lasts from three to four minutes. Administration can then be repeated, and the patients may be kept under for an hour. It is very useful for short operations, since it is safe, easily administered, and does not cause any after-inconvenience. The patient wakes up at once and can usually walk to bed. The appetite is not impaired. After long anæsthesia there is albuminuria. Cumston[5] and Josserand[6] are also in favour of this drug. They find that it can be used as a preliminary to ether, thereby avoiding the excitement stage. It is not unpleasant to the patient, and reduces the quantity of ether necessary. For short anæsthesia both authors employ ethyl chloride alone. It may cause slight excitement, but this is usually merely of the nature of a muscular spasm, and not due to cerebral stimulation. Respiration is as a rule not affected, but the pulse is slowed through pneumogastric stimulation.

Montgomery and Bland[7] have used the drug in gynæcological operations, varying from hysterectomies to vaginal examinations. It is specially indicated for overcoming muscular contraction and allaying pain in pelvic examinations, as the patient is under it only a short time, and immediately recovers and is able to go home. It is also suitable for all minor operations not requiring prolonged anæsthesia, as in incision for pelvic drainage in enfeebled patients. They found it very useful to anæsthetize the patient with ethyl chloride before commencing chloroform or ether.

Whiteford[8] states that for short anæsthesia ethyl chloride is cheaper than nitrous oxide. An anæsthesia with nitrous oxide costs about 5·1 pence, using ethyl chloride about 4·7 pence. According to Hewitt the mortality with ethyl chloride is between 1 in 10,000 to 1 in 15,000. The anæsthesia produced lasts twice as long as that with nitrous oxide, and no preliminary gagging for dental operations is required, as it induces sufficient muscular relaxation.

Dansey[9] has used ethyl chloride as an anæsthetic for short operations and as a preliminary for etherization. He uses a Clover's inhaler. His experiences have been highly satisfactory.

Gaudiani[10] finds that this anæsthetic possesses advantages and disadvantages. The chief advantage is the rapidity with which anæsthesia is obtained. Patients go under in from twenty-five to ninety seconds. Only alcoholics require longer than two minutes. The patients take it well and awake without vomiting or after-effects, so that it is very suitable for administration for short operations in the physician's house. The disadvantages are that the muscular relaxation is not complete, and the respiration is often so hurried that it is impossible to operate on the abdomen.

References.—[1]*Amer. Jour. Med. Sci.* Dec. 1903; [2]*Cent. f. Chir.* xxx. 1903;

[3]*Proc. County Med. Soc. Philad.* xxiv. 1903; [4]*Jour. d. Prat.* xvii. 1903; [5]*Brist. Med. Chir. Jour.* 1903, cxlviii; [6]*Lyon Méd.* c. 1, 1903; [7]*Jour. Amer. Med. Assoc.* April 2, 1904; [8]*Brist. Med. Chir. Jour.* in *Ther. Gaz.* June, 1904; [9]*Aust. Med. Gaz.* June 20, 1904; [10]*Riform. Med.* June 29, 1904.

**EUCAINE.**

Simon[1] prefers this preparation to cocaine for local anæsthesia. To produce the best action the eucaine should be dissolved in normal saline solution, and brought to the temperature of the body. The drug was used in 188 cases, and only once did toxic symptoms arise, *viz.*, headache and nausea in an old man whose bladder was filled with 80 cc. of a 4 per cent solution during a Bottini operation. The general conclusion come to is that eucaine compared with cocaine is almost without danger, and is as efficient an anæsthetic. The addition of **Adrenalin,** 1–20,000, does not produce any unpleasant action, while it intensifies the anæsthetic effect. The most successful method for employing the drug is the injection of 1 per cent solution distally to a ligature. This is preferable to simple infiltration or the combination of eucaine and adrenalin.

β-eucaine is only slightly soluble in water. At ordinary room temperature, water dissolves about $3\frac{1}{2}$ to 4 per cent. This concentration is sufficient for ophthalmic work, dentistry, and for infiltration and regional anæsthesia, but is too dilute for anæsthetizing mucous membranes, and for operations on the throat, nose, and ear. Langgard finds that the *lactate of eucaine* is much more soluble in water; at ordinary room temperature water dissolves 29 per cent of the lactate, and in alcohol a 13 per cent solution can be obtained. The watery solution is slightly alkaline. The proportion of eucaine in the lactate is somewhat less than in the β-eucaine, 100 parts of the latter containing as much as 119 of the lactate. Animal experiments have shown that the lactate in 10 to 15 per cent solutions is non-irritating and anæsthetic in its action. There is no side action, such as hyperæmia, ischæmia, or increase of tension when applied to the eye. Katz has used the new salt in human beings, and finds it suitable for clinical purposes. As regards dosage, for ophthalmic and dentistry work use a 2 to 3 per cent solution; for infiltration anæsthesia, 0·12 per cent; for regional anæsthesia, 2 to 5 per cent; for throat, nose, ear, 10 to 15 per cent solutions. To the weaker solutions an addition of sodium chloride should be made, *i.e.*, for solutions under 1 per cent an addition of 0·8 per cent NaCl; for 1 to 2 per cent solutions an addition of 0·2 per cent NaCl.

REFERENCE.—[1]*Therapist,* Sept. 1904.

**EUCALYPTUS OIL.**

Kesteven[1] most strongly recommends this drug in **Typhoid Fever.** By its antiseptic action it reduces putrefaction and fermentation in the intestines. It is a distinct antipyretic, while it gives relief to the general symptoms of tympanitis, dry skin, etc. There is a certain

abortive action, since the average duration of treatment is about fourteen days to the re-establishment of normal temperatures. The minimum dose is 10 minims, but this may be increased to 30 minims. The taste may be masked by glycerin or spirits of chloroform. Up to 1884 only 4 patients died out of 220 cases, since which date he has never lost a case.

Hall[2] shows that " oil of eucalyptus " is a very loose term. Different species afford different volatile oils. *Eucalyptol* is not synonymous with oil of eucalyptus. It is one of the oxidized constituents of the oil, but it is not the most potent germicide. Other constituents are aldehydes, peptones, terpenes. Of these **Aromadendral** is the strongest bactericide.

References.—[1]*Ther. Gaz.* June, 1904 ; [2]*Thesis Univ. of Sydney*, 1904.

**EUGUFORMUM.**

This preparation is said by Joseph[1] to be an improvement on liq. carb. deterg. It is prepared from guaiacol and formalin, which combine to form methylene-di-guaiacol. This is purified and partly acetylized by dissolving it in boiling glacial acetic acid, and pouring this solution into water. Euguform contains about 6 to 7 per cent of acetyl. It is anæsthetic and antiseptic, relieving itching and pain, and drying up discharges. *Euguformum solubile* is a 50 per cent solution in acetone. It gives good results in **Prurigo, Lichen,** and **Pruritus.** For **Strophulus Infantum** he advises an emulsion of 10 parts eugufor. solub., 20 parts each zinc oxide and starch, 30 parts glycerin, and water to 100 parts. This requires no covering or dressing. For **Tyloma Palmare et Plantare,** euguformum in the form of a 20 per cent ointment gave good results.

Lotheissen[3] recommends this drug as a substitute for iodoform. It is a fine greyish-brown powder, almost without odour, which is only slightly soluble in alcohol. In contact with the tissues it is broken up into its component parts, guaiacol and formaldehyde. It is only half as toxic as iodoform. In strong solution it is apt to cause necrosis of the skin, so that a 5 per cent glycerin emulsion is the most suitable strength for injecting into abscess cavities, sinuses, etc. The dry powder is an excellent drying and cleansing application for foul sores. For ulcers a 10 per cent vaseline preparation can be applied daily, or the dry powder can be dusted on every two or three days. Gauze can readily be impregnated by dissolving the drug in alcohol containing a little glycerin.

References.—[1]*Deut. Med. Woch.* Jan. 21, 1904 ; *Brit. Med. Jour.* April 9, 1904 ; [3]*Centr. f. Chir.* No. 26, 1904.

**EUMYDRIN.**

This new mydriatic, obtained from atropine, is a white powder soluble in water. It is claimed that its action on the eye is similar to that of atropine, but its poisonous effect on the central nervous system much less marked ; it is said to be fifty times less toxic.

Lindenmeyer[1] has used it in various strengths, 1 to 2, 5 to 10 per cent. The weak solutions cause **Dilatation of the Pupil**, coming on in ten to twenty-four minutes, reaching a maximum in a further twenty to fifty minutes, and lasting twelve hours. Paralysis of the accommodation follows slightly after the mydriasis. Stronger (5 to 10 per cent) solutions cause dilatation in eight to ten minutes, reaching a maxmum in twenty to thirty minutes, and lasting three, five, to seven days. Accommodation is completely paralysed, and is recovered about the same time as the mydriasis. There were never toxic symptoms. The weak solutions were midway in effect between homatropine and atropine, while the stronger solutions were as strong mydriatics as atropine, but the paralysis of accommodation did not last so long. In irritative conditions, foreign bodies in the cornea, and phlyctenular ulcers, the weaker solutions gave more lasting relief than with homatropine, which acts too short a time, while atropine lasts too long. The stronger solutions were able to break down adhesions in iritis. While it is less suitable than homatropine for ophthalmic examinations, it will prove useful where a longer effect is required.

References.—[1]*Berlin klin. Woch.* Nov. 23, 1903; *Brit. Med. Jour.* Jan. 15, 1904.

**EXODIN.**

Ebstein[1] recommends this new oxy-anthrachinon derivative as a safe **Purgative.** It is a yellow powder insoluble in water, without taste and odour. The best method of administration is mixing with water. The dose for a child is 0·5 grams (7½ grains), for an adult 1·0 gram (15 grains). The drug causes no unpleasant sensation either in the stomach or intestine. The appetite is not affected, and it can be taken either on a full or empty stomach. Purgation occurs in eight, ten, or twelve hours, rarely sooner or later, and is without pain or discomfort. The stools are soft or formed, and as a rule the movement of the bowels is repeated once or twice, and the latter motions may be thin. The fæces are natural in colour, and the urine is not altered, so that there is no staining of the linen. Exodin is remarkably constant in its action, and as regards activity comes between the laxatives and purgatives. The chief points about the action are the painless free purgation, and absence of gastric irritation.

Stauder[2] states that this is a slowly acting purgative, which requires from eighteen to twenty-four hours to manifest its effect. It is tasteless, and produces no unpleasant griping, eructations, or nausea. The stools are soft and formed. Its effect lasts several days, and is not followed by constipation.

References.—[1]*Deut. Med. Woch.* No. 1, 1904; [2]*Ther. d. Gegenw,* June, 1904.

**FILIX MAS.**

Hackl[1] reports a case of **Poisoning** with the extract. The dose was ʒiij. The patient suffered from severe diarrhœa and vomiting, while

there was collapse and coldness of the extremities. Under treatment with camphor injections, mustard leaves, and hot drinks, he recovered. A noteworthy symptom was the persistence for a whole day of trembling of hands and feet, occasionally amounting to tonic and clonic spasms. The patient was very alcoholic, and possibly this factor may have affected the symptoms.

REFERENCE.—[1]*Münch. Med. Woch.* No. 8, 1904.

**FLUORESCENT SOLUTIONS.**

It has been known for some time that under certain conditions fluorescent solutions exert a toxic influence on infusoria. In the dark such solutions have no action, but they become actively poisonous when exposed to the rays of the sun, or even to diffused daylight. Tappeiner had thought that the action was not simply that of a photographic sensitizer, but was of the nature of an absorption of certain rays of the spectrum. The particular rays, which the fluorescing substance absorbs, are cut off; on the other hand, the inhibiting action remains almost unimpaired if all the rest are cut off, and only these absorbable rays are allowed to pass. The activity certainly did not depend merely on the degree of fluorescence, since the photodynamic action is greater, the less brilliant the fluorescence that is produced.

A more accurate insight into the actual nature of the phenomena has been obtained from the experiments of Straub[1]. He was able to show that the activity of the fluorescing substances was really due to the fact that these substances in the presence of light are able to *absorb oxygen* from their surroundings, and that the presence of oxygen is essential if they are to exert an inhibitory influence on vital phenomena. By means of a simple experiment he was able to demonstrate the oxidizing effect of eosin solutions. If a mixture of dilute eosin, starch, and potassium iodide be exposed to light, the potassium iodide becomes split up, and the iodine set free turns the starch blue. This action does not occur in the dark; and even in the light, if all oxygen be withdrawn by boiling the solution, and extracting the air by means of a mercurial pump, the reaction does not occur. Similarly the presence of a reducing agent, *e.g.*, $Na_2SO_2$ will prevent the reaction. The process is essentially that of the production of peroxide, and all the fluorescing substances are capable of auto-oxidation. If the supply of oxygen be continually renewed, they seem, in the presence of oxidizable material, to be able to go on indefinitely producing peroxide.

These experiments of Straub have been confirmed by other observers, working with different substances along the same lines. Edlefsen[2] was able to follow the transformation of β-naphthol into β-naphthochinon, when *azoresorufin* was added to a weak solution of the former and exposed to light. In another series of experiments

he was able to show the formation of the oxide of iron from a solution of ferrous sulphate on the addition of *eosin*, *quinine sulphate*, or *azoresorufin* in the presence of light. He was even able to show that a solution of a fluorescent substance in distilled water forms active oxygen on exposure to light.

The effect of oxidation has been investigated along other lines. It has been found that ricin and other **Toxins** lose their characteristic agglutinating action on the blood corpuscles after some exposure in an eosin solution. At the same time the toxicity is much diminished. Tappeiner and Jodlbauer worked with the toxins of **Diphtheria** and **Tetanus.** When mixed with a solution of eosin 0·05 per cent, after exposure to the sun they became markedly less toxic, so that animals (in the case of the diphtheria toxin) could survive 120 times the lethal dose. In the dark the eosin solution had but little action. Its only effect was to retard slightly the rapidity of the toxic action. Lichtwitz[3] examined the effect of eosin on the hæmolytic action of sera. He found that the addition of one drop of an eosin solution (= 0·001 gram of eosin) and exposure to light, distinctly retarded the hæmolytic action. The serum was rendered inactive owing to the destruction of the complements, while the amboceptors remain intact.

Jesionek[4] has investigated the action of photodynamic fluorescent substances on **Cutaneous Diseases.** He employed weak solutions, 0·01 per cent to 0·5 per cent of eosin. The diseased skin was painted with the solution, and by frequent reapplication kept permanently moist. It was constantly exposed to light, either diffuse daylight, direct sun's rays, or concentrated rays. On dull days an electric arc-light of 220 volts and 25 ampères was used, but was not so satisfactory as the direct sun-rays. For concentrating the rays, either a Finsen plano-convex lens or a glass globe was used. To prevent the action of the heat-rays, the lenses were filled with solutions which absorb the heat-rays and only permit the passage of those rays which produce the fluorescence. For eosin a mixture of copper sulphate and picric acid acts well. The concentrated light is employed only for a short portion of the day; the rest of the time diffused daylight is used. The best effects are got with very weak solutions of eosin. Strong solutions (4 to 5 per cent) under the action of light unite very intimately with the superficial layers of cells, forming dense crusts, which protect the underlying tissues, take a very long time to separate, and, if forcibly removed, lead to considerable hæmorrhage. On the other hand, very weak solutions, though they apparently cause no great immediate improvement, are much more suitable. They form a very thin film, which is easily removed, and so the action is continuous. Again, strong solutions affect the vitality not only of diseased tissue, but also prevent the formation of normal granulation tissue, so that there is no attempt at healing under the action of strong solutions; weak solutions only destroy the diseased tissue, and do not interfere with the development

of healthy granulation tissue. Consequently only very weak (0·1 to 0·01 per cent) eosin solutions should be used. Under the action of heat and light the concentration of such a solution constantly alters after being applied to the skin. Therefore the best plan is to paint the skin with such a solution, and then keep it constantly moistened with a solution which just gives a trace of colour and fluorescence; or the painted part may be merely kept moist with water or physiological salt solution. So long as there is still a trace of colour present, this is sufficient for photodynamic purposes. Minimal quantities are sufficient for therapeutic action. These weak solutions may be used as intraparenchymatous injections into the infiltrated walls of ulcers, but such injections should be restricted for this class of case, as there is always the danger of forming an impermeable layer, which cuts off the fluorescence-producing rays. During the times that the patient is not exposed to the light, the affected parts are covered with boracic lotion or other mild applications.

Tappeiner and Jodlbauer[5], using these precautions, obtained favourable results in certain forms of cutaneous disease, *e.g.*, **Lupus, Cancerous Ulceration, Syphilis,** and **Tuberculous Ulceration of the Testicle.** A large fungating cancer of the size of a five-shilling piece, in a woman of seventy, was healed in sixty days, leaving a smooth cicatrix. The treatment consisted of painting with a 5 per cent eosin solution, and exposure to the sun, or an arc-light of 25 ampères. Latterly a few drops of the eosin solution were *injected* into the edges of the ulcer, and this seemed to hasten the cure. Good results were also obtained in two cases of rodent ulcer and cutaneous carcinoma. Five cases of lupus were treated, and apparently the lupus tissue readily succumbs to the effect of eosin and light. Superficially-placed nodules covered with only a thin layer of epidermis rapidly healed. If the nodules are deeply situated and protected by a thick layer of skin, the treatment has little action. Occasionally the constant application of the eosin brought on an erythematous condition with œdema. The nodules seem to share in the general œdema, and after it has passed they are found to have become much smaller.

References.—[1]*Münch. Med. Woch.* No. 25, 1904; [2]*Ibid*, No. 36, 1904; [3]*Ibid*; [4]*Ibid*, No. 19, 1904; [5]*Ibid*, No. 47, 1904.

**FORMALDEHYDE.**

In connection with the newer urinary antiseptics—urotropin, helmitol, and hetralin—which are said to depend for their action on the elimination of the formalin portion in the urine, it is interesting to note that Gianelli[1] has never been able to demonstrate the presence of unchanged formalin in the urine. He considers that it is not eliminated as such from the organism, but probably undergoes oxidation in the tissues.

Reference.—[1]*Rif. Med.* Nov. 18, 1903.

**GAULTHERIA (Oil of).**

Cases of poisoning with this substance are very rare. Price and L'Engle[1] report a case which occurred in a child, aged two years. The amount taken was about 1 drachm of commercial oil of wintergreen, which is really oil of birch. The child vomited several times before lavage was done. For two hours there was nothing abnormal noted in the appearance of the child, and it did not seem to be in pain. After two hours, however, there was abdominal pain, drowsiness, and great thirst. The pulse rose to 150, the face became flushed, and the respirations were somewhat irregular and laboured. Hearing was impaired, and there were hallucinations of vision with slight trembling and twitching of the hands and neck. The child remained fairly well for about six hours, but seven hours after the drug was swallowed there was a general convulsion. After this the respirations became deep, depressed, and laboured, falling in rate to 4 to 5 in the minute ; and death resulted in the ninth hour from respiratory failure.

REFERENCE.—[1]*Amer. Jour. Med. Sci.* Feb. 1904.

**GELATIN.**

Kaposi[1] investigated the effect of gelatin solutions on the **Coagulation of the Blood.** He employed preliminary injections of *hirudin*, a substance obtainable from the head of the leech, which has the property of preventing the coagulation of blood. The blood of a rabbit withdrawn within half an hour after a suitable injection of hirudin remains fluid for twenty-four hours. If examined under the microscope the corpuscles appear freely swimming about, without much tendency to rouleaux or fibrin formation. If some gelatin solution be run under the coverslip, the corpuscles rapidly swell up to more than double their original volume, and run together to form clumps of thirty to forty. They apparently become glued together by an action largely mechanical. Experiments were then made with preliminary injections of hirudin, followed by intravenous injections of gelatin. Here an important difference between gelatin which set on cooling, and gelatin which remained fluid, was noted. The latter had but little effect in increasing the coagulating power of the blood, whereas the former had a distinct action if given in quantities of from 0.8 to 2 grams gelatin per kilo of body-weight. Microscopic examination again revealed clumping of large, swollen, sticky corpuscles. The coagulation was a true one, and not merely a setting of the gelatin, since the blood clotted even if the samples were kept at blood-heat, thus preventing the gelatin from setting. The same antagonism appears if the gelatin is given subcutaneously, and here again the impurer solution which set at the ordinary room temperature proved superior to the purified over-heated solutions, which remain fluid.

From these experiments it follows that the method of preparing

the gelatin solutions is of importance. By excessive heating, gelatin loses its property of setting. The most suitable method of preparing gelatin is that recommended by Krause, *viz.*, exposing the gelatin for five successive days to a steam vapour of 100° C. for thirty minutes. Such preparation gives a gelatin which sets, and which may contain small quantities of gelatose. For local applications to bleeding points, *e.g.*, in the nose, vagina, etc., either fluid or setting solutions may be employed, since the action is here a purely mechanical one.

Forlanini[2] finds that gelatin, whether given internally or by subcutaneous injection, lowers the blood-pressure; and he suggests that some of the good resulting from its use in **Aneurism** may be due to this action.

Mohl[3] has experimented on rabbits and dogs, and finds that intravenous injections of gelatin cause an increase in the fibrinogen of the blood. This increase appears at the earliest at the end of twelve hours, and as a rule requires longer. The fibrinogen excess remains for two or three days. After oral administration of gelatin there is no increase of fibrinogen. The blood-clot of a gelatinized animal is remarkably firm and tough. In the course of his investigations Mohl discovered that this power of increasing the fibrinogen of the blood is common to all bodies which produce leucocytosis on being injected into a vein. The practical conclusions drawn by Mohl are: That a styptic action can only be obtained if gelatin is injected subcutaneously or directly into a vein; and that this action takes at least twelve hours to develop. Consequently the best way to use gelatin is as a prophylactic.

References.—[1]*Grenzgeb. d. Med. u. Chir.* No. 3, 1904; [2]*Riform Med.* Feb. 17, 1904; [3]*Münch. Med. Woch.* No. 46, 1903.

**GLYCERIN.**

Glycerin is so largely used in the preparation of vaccine lymph, that exact knowledge of its antiseptic powers is greatly to be desired. According to Rosenau[1] the antiseptic and germicidal value of glycerin has been overestimated; his experiments during the past two years indicate that both are but very feeble. The addition of small quantities of gelatin to the culture medium—less than 10 per cent—stimulates the growth of bacteria. All growth is checked by the presence of 50 per cent, but less than this proportion cannot be depended upon. The antiseptic power of different samples varies. The toxin of tetanus was not affected at all by prolonged contact with glycerin. These experiments show that glycerin cannot be relied upon to free from risk lymph contaminated with tetanus.

Levy[2] communicates certain observations which illustrate the effect of glycerin on lymph. In 1902 a supply of fresh lymph which had only been twenty-four hours in glycerin, was used to vaccinate some children. All the infants reacted, with sharp swelling and redness of the pustules, which became in part phlegmonous in character.

In some instances there was formation of abscesses in the surrounding tissue, and suppuration of the axillary glands. After a further eight days the same lymph was used for a new set of vaccinations, and in none of these was there any irritation caused. Thus the simple preservation in glycerin for eight days, had converted a dangerous lymph into a suitable lymph. The effect of glycerin on the actual vaccine material is to gradually lessen the activity of the vaccinating elements. This can be readily shown by re-vaccinations. People just on the border line may not take with oldish lymph of six to eight weeks' standing, but will react perfectly well to fresh lymph which has only been kept in glycerin for a few days.

REFERENCES.—[1]*Med. Rec.* Dec. 19, 1903; [2]*Münch. Med. Woch.* No. 7, 1904.

**GLYCOGEN.**

Laumonier[1] points out that in diabetes the hepatic cells have not lost their power of manufacturing glycogen, but they have lost their power of fixing it in their cytoplasm. He has administered small doses of glycogen with successful results both in **Glycosuria**, and for the other symptoms—loss of strength, polydypsia, and polyuria. The amount administered varied from 1 to 2 grams daily, and was given by the mouth. The action is slow but progressive, and the sugar gradually disappeared from the urine, while the patient was able to resume normal diet. In cases where **Albuminuria** was present this also was markedly improved. He fancies that glycogen acts on the hepatic cells, stimulating their action.

REFERENCE.—[1]*Bull. Gén. de Thér.* Jan. 15, 1904.

**HEROIN.**

Becker[1] confirms Hein's statement that heroin is a valuable **Anaphrodisiac** in cases of sexual excitement, when given in large doses, 0·01 to 0·03 gram ($\frac{1}{6}$ to $\frac{1}{2}$ grain); smaller doses are inactive. Frequently the effect wears off and the dose needs to be increased. He has used the drug in painful erections in gonorrhœa; here heroin checks the erections, but pain continues; in pathological increase of sexual desire; in persistent pollutions; after operations on the penis. In epididymitis, catarrh of the bladder, and acute prostatitis, the action of heroin is not very evident, and is certainly inferior to that of morphine.

REFERENCE.—[1]*Berl. klin. Woch.* Nov. 23, 1903; *Brit. Med. Jour.* Nov. 23, 1903.

**HETRALIN.**

This is a new phenyl-hexamethylen-tetramin derivative, intended as a substitute for urotropin. It is a useful urinary antiseptic. Riegner[1] has employed it for a considerable time in cystitis. Under its action the urine becomes clear and loses its alkalinity. Though he has used it for some months on end, he has never observed ill-effects therefrom. The dose is three tablets daily, each containing 0·5 gram

(7½ grains). By preventing the decomposition of the urine it is of use in diseased conditions of the cord attended by difficulty of micturition, as it seems to lessen the risk of cystitis.

According to Ledermann[2] this drug gives extremely good results in the treatment of acute and chronic **Gonorrhœal Cystitis**, especially in those cases in which the last portions of the urine passed are very turbid. In many cases of this kind the urine cleared up very quickly, and the discomfort disappeared.

Lohnstein[3] has made an extensive trial of the new preparation. His results have been very favourable. There is a double action. The formaldehyde portion of the drug exerts a powerful antiseptic effect, while the phenol portion tends to make the urine acid. He has used hetralin in cases of gonorrhœa, and in cystitis and pyelitis of varied origin. The property of rendering the urine very acid proved of great service in cases of **Phosphaturia**. The pain due to the passage of large quantities of irritating phosphatic crystals occurring towards the end of micturition is rapidly relieved by hetralin. He has estimated in several cases the acidifying action on the urine, and shows that the quantity of decinormal soda solution necessary to neutralize 5 cc. of the urine may rise from 0·5 cc. to even 2 cc. within a few days.

Goldberg[4] compares the actions of urotropin, helmitol, and hetralin. The antiseptic action was tested by cultures made from samples of urine drawn off by a sterile catheter. From these experiments he concludes that urotropin in 7½-grain doses every six or eight hours, after the second or third days' treatment exerts an influence which checks the growth of staphylococci and streptococci. The cocci are not actually destroyed, but the growth is inhibited. The action of helmitol was similar, but it exerted a stronger action on the growth of the bacillus of typhoid fever. On the other hand, it does not destroy sarcinæ and streptococci. Hetralin resembled urotropin and helmitol in its action. It possesses, however, the advantage of greater solubility. Even when dissolved in small quantities of water only, it does not irritate the stomach. All the three preparations give rise to intestinal disturbance; these consist in diarrhœa and colic. The intestine soon accustoms itself to hetralin, so that this effect passes off without any reduction of dose. Although both the other substances occasionally cause irritation of the kidneys, this action has not yet been noted with hetralin. In one case of chronic tuberculosis of the bladder and kidney, where urotropin invariably caused increase of the pain and more frequent micturition, hetralin was perfectly unirritating and caused distinct improvement. Hetralin should not be given in alkaline mixtures, as this seems to interfere with its action.

References.—[1]*Wien. klin. Ther. Woch.* No. 27, 1904; [2]*Derm. Centr.* Sept. 1903; [3]*Allgem. Med. Centr. Zeit*, No. 19, 1904; [4]*Centr. f. inn. Med.* No. 22, 1904.

**HYDROGEN PEROXIDE.**

French observers[1] find that this is the best substance to use as a **Preservative for Milk.** Immediately after milking add from 1 to 2 per cent of the hydrogen peroxide, and keep the milk in a cool place. Milk thus treated remains tasteless and odourless, and coagulates on churning.

Cohn[2] succeeded in causing several cases of **Nævi Pigmentosi** to disappear completely by repeatedly bathing them with a 30 per cent solution of peroxide of hydrogen.

References.—[1]*Presse Méd.* June 15, 1904; [2]*Monats. f. Prakt. Derm.* Bd. xxxvii, No. 7.

**HYOSCINE HYDROBROMATE.**

Robertson[1] has administered this drug in 57 cases before etherization. In doses of $\frac{1}{100}$ gr. given half an hour beforehand, it causes dilatation of the pupil and dryness of the mouth. It antagonizes the stimulating action of the ether, while it increases the rapidity of the going under. The mucous secretion is lessened, and the patient's apprehension before the operation is diminished. It also induces sleep after the operation.

Krauss[2] reports a case of **Poisoning** by hyoscine hydrobromide used as a mydriatic. A single instillation of $\frac{1}{120}$ gr. into each eye caused dizziness, flushing of the face, dryness of the throat, delirium and hallucinations, lasting for seven and a half hours. The patient was a girl, aged fifteen. Krauss points out that the first instillation of a mydriatic should take place in the morning, and not, as usually happens, in the evening, lest delirium occurring in the night lead to a fatal secondary accident.

Another case of poisoning from the same drug was seen by Given[3]. In this instance the patient was a man, aged sixty-nine years, who, on account of cramps in the legs and senile tremor, was ordered $\frac{1}{200}$ of a grain of hyoscine hydrobromide at bed-time. Owing to an unfortunate mistake the chemist made up the medicine to contain $\frac{1}{200}$ of a *gram* instead of $\frac{1}{200}$ of a *grain* in each dose. After the first dose the patient became deeply comatose, with stertorous breathing and flushed face. The stomach was washed out, coffee, strychnine, morphia, and caffeine were administered. The patient regained consciousness in about eleven hours, and thereafter made an uninterrupted recovery.

References.—[1]*Med. Rec.* Jan. 9, 1904; [2]*N.Y. Med. Jour.* Dec. 12, 1903; [3]*Lancet*, Jan. 2, 1904.

**ICHTHYOL (Compounds of).**

Ichthoform is a compound of ichthyol and formic aldehyde. It is insoluble in ordinary media, but in contact with weak alkalies splits up into its two component parts, thus exerting both an antiseptic and an astringent action. Burnet[1] has used it as an **Intestinal Antiseptic** and **Astringent** in doses of 10 to 15 grs. thrice daily. For children the dose is 2 to 10 grs., and it can be readily given between two thin slices

of buttered bread. For infants 2 grs. in jelly may be given every six hours. Mixed with equal parts of boric acid it forms a suitable **Dusting Powder** for ulcers. Ointments of 1 to 5 per cent ichthoform in a basis of lard or vaseline are useful in chronic eczema. Lastly, it can be used as ichthoform gauze instead of iodoform gauze, as it is inodorous and non-toxic.

ICHTHARGAN is a compound of ichthyol and silver, readily soluble in hot and cold water. It is extensively used either as an injection (1–5000 to 1-500) in **Gonorrhœa**, or in bougies containing about $\frac{1}{4}$ grain. In pessaries containing $\frac{1}{2}$ to 1 grain it is useful in **Leucorrhœa** arising from various causes. In **Dermatological** practice ointments containing from $\frac{1}{2}$ to 2 per cent have proved generally useful in infectious diseases. Stronger preparations are apt to cause much burning if the skin is raw or tender. Ringworm requires strong applications of 5 or even 10 per cent. Boils frequently abort after being thoroughly treated with 10 per cent ointment.

Neuwirth[2] finds ichthargan an excellent combination for **Colpitis**. The vagina is cleaned with sterile swabs, then ichthargan solution (1–1000) is run in through a cylindrical speculum, which is slowly withdrawn, so that the parts are bathed with the solution for one or two minutes. The solution is then allowed to escape, and gauze soaked in a solution of ichthargan 5 parts, water 5 parts, in glycerin 90 parts, is introduced, and a plug of wool inserted, which is removed after ten to twelve hours.

REFERENCES.—[1]*Lancet*, March 12, 1904; [2]*Ther. Monats.* June, 1903; *Brit. Med. Jour.* Aug. 22, 1903.

**IODIDES.**

Althaus[1] employs large doses of iodide of potassium in **Lobar Pneumonia.** The invariable termination is then by lysis, not crisis. The temperature runs a fairly low course, and the symptoms are well controlled. Immediately after the diagnosis is made, the patient is given 10 to 15 grains of KI, which dose is renewed according to the severity of the case every two or three hours day and night till defervescence is well established. A 50 per cent solution is employed, and it is given in milk. In many cases as much as 1000 to 1500 grs. of iodide have been given in the day. So long as the heart is regular and the second pulmonic sound sharp, the drug may be continued. If it cannot be given by the mouth, the iodide can be administered by the rectum.

According to Lesser[2] the iodide of potassium does not form albuminous compounds, but circulates unchanged both in the plasma and in the corpuscles. The greatest quantity is found in the lungs. The drug seems to act as a salt, and not in virtue of the iodine it contains.

Where iodism is produced by the ordinary alkaline iodides, the *syrup of hydriodic acid*[3] can frequently be taken without causing any

symptoms. Provided the drug is well diluted, and taken about an hour after food, large doses—20 to 40, or even 60 minims—can be taken without difficulty. If there is any gastric disturbance present, the patient should take Vichy water, or a little sodium bicarbonate dissolved in water.

Discussing the treatment of **Goitre** by the injection of tincture of iodine, Baylin[4] points out that from a therapeutic point of view the division into parenchymatous and cystic is less important than an age classification. If of recent origin, the goitre cures rapidly; if of old standing, the treatment is slow, and the cure often incomplete, but even in these cases real benefit is obtained in arresting the growth and partially causing the goitre to resolve. Under antiseptic precautions the tincture is slowly injected into the most prominent part of the goitre. The pain varies much. Certain patients experience for some hours a local reaction, with pain in the neck, teeth, or, more frequently, swelling which interferes with swallowing. When this passes off the goitre begins to resolve. The number of injections required varies, but as a rule several are necessary.

References.—[1]*Ther. Gaz.* May, 1904; [2]*Arch. f. Derm. u. Syph. t.* lxiv. 1903; [3]*Ther. Gaz.* Sept. 15, 1903; [4]*Rev. Méd. de Normandie,* Jan. 25, 1904. *Bull. Gén. de Thér.* June 25, 1904.

**IODINE.**

Fuchs[1] finds that a simple method of **Preparing Catgut** is to employ a solution of iodine and potassium iodide, of each 1 part in 100 parts water. The catgut is rolled in a single layer on glass plates or spools, and is immersed in this liquid for eight days. It is then perfectly sterile and of excellent physical properties. It is very strong and flexible. The fat should not be extracted before immersing the gut. Clinically the iodized gut causes no irritation when used in deep tissues. It is not absorbed too rapidly. Owing to its great strength it is very suitable for ligatures. It is not suitable for stitching the skin.

Wyatt Wingrave[2] recommends as a non-toxic preparation of iodine a *syrupus iodo-tannici*. The formula is as follows:—

| | | | | |
|---|---|---|---|---|
| ℞ Iodine | grams 2½ | Alcohol (90 per cent.), | cc. 38 |
| Tannic acid | grams 4 | Syrup, q. s. | to cc. 75 |

Dissolve the iodine in the alcohol; add the tannic acid and 30 cc. of the syrup; heat to just below boiling point until the solution affords no evidence of free iodine with the starch reaction (about twenty minutes). Cool, and add the remainder of the syrup, with flavouring. Each drachm contains 2 grs. of iodine. It may be given in doses of ½ to 2 drachms in water or wine before meals, according to age. The iodine is in loose combination with an organic substance, yet it is readily given up to the tissues after absorption. It is palatable and unirritating. Children tolerate it well, and it is useful for **Chronic Lymphadenitis** associated with, or independent of, enlarged tonsils,

especially if the enlargement of the glands persists after tonsillotomy. It is also useful in cases of slight **Enlargement of the Tonsils** when operation is refused. Combined with arsenic, it does good in **Atrophic Rhinitis,** and is useful in simple **Bronchocele.**

Lesser[3] holds that the iodides act as such, and do not split up in the tissues and liberate free iodine. He considers that iodism is due to the absorption of excessive quantities of the alkaline iodides, and that it should, properly speaking, be called alkaline iodism. To prevent its development he recommends the following precautions: (1) Administer the iodides in mucilaginous substances which prevent rapid absorption; (2) Give the drug in small, frequently repeated doses, instead of single large doses; (3) Give the iodide of sodium along with opium per rectum, to render the absorption slow. In cases of idiosyncrasy albuminous iodine compounds can be substituted, or iodipin may be given subcutaneously. [Iodism occurs with small doses of pure iodine.—Ed.]

References.—[1]*Münch. Med. Woch.* No. 29, 1904; [2]*Brit. Med. Jour.* Mar. 26, 1904; [3]*Deut. Med. Woch.* Nov. 12, 1904; *Brit. Med. Jour.* Feb. 13, 1904.

**IODIPIN.**

Landow[1] shows that iodipin is capable of giving rise to a shadow when exposed to the Röntgen rays. Its presence must therefore be kept in mind, as it remains in the tissues for a long time after injection. In Landow's case a Röntgen ray examination revealed the presence of peculiar dark patches among the muscular tissue. The question of myositis ossificans arose, but an incision demonstrated only the remains of iodipin injections made *five months* before.

Schuster[2] finds that in a certain proportion of cases of **Gouty Rheumatism,** subcutaneous injections of iodipin give unexpectedly good results, even after the ordinary bath and drug treatment has proved unsuccessful. He injects in the neighbourhood of the larger joints 10 to 15 grams of the 25 per cent clear iodipin. This is repeated every two or three days. [We have tried this plan in one case, with very slight benefit.—F. J. C.]

Lesser[3] points out that iodipin, when injected gradually, liberates iodine, which appears in the urine, but when taken by the mouth a fatty substance is formed which is not excreted by the kidney. It cannot replace iodides in ordinary cases, but may be useful in maintaining iodine in the body for a prolonged time.

References.—[1]*Münch. Med. Woch.* No. 38, 1903; [2]*Zeits. f. Diät. u Phys. Therapie,* April, 1904; [3]*Arch. f. Derm. Syph. t.* lxiv. 1903; *Brit. Med. Jour.* Dec. 5, 1903.

**IODOFORM.**

Wiesinger[1] reports the cure of an obstinate case of **Hydrops Intermittens** of the knee by the injection of an emulsion of iodoform in glycerin. The dropsy came on every ten days or so, reaching an

acme in twelve hours, and passing off completely within twenty-four hours. During the intervals there was complete freedom from pain, and the patient was able to walk long distances. The condition had persisted for five years, and had resisted all treatment. A single injection of 10 cc. of the iodoform emulsion into the joint during the height of an attack caused a moderate reaction lasting for about six days, and was followed by a permanent cure.

Heile[2] attempts to reconcile the conflicting clinical and experimental evidence as to the antiseptic value of iodoform. When mixed with the normal fluids or juices of the body in the absence of oxygen, it becomes decomposed, liberating substances which are actively germicidal. The tissues present different power as decomposing agents. The order of potency is: liver, spleen, blood, kidney, lung, fat. Granulation tissue, and especially tuberculous granulation tissue, is active. The substance set free is not iodine, but di-iodacetylene, CHI–CHI. This is a powerful germicide, but is neutralized on being oxidized, which probably explains why iodoform is relatively inactive in surface wounds, while it acts so beneficially in closed cavities.

In contradistinction to silver nitrate, which acts on the mucous membrane, iodoform injections act only on the urine. Iodoform is therefore useless in tuberculosis, and where the urine is acid and undecomposed. On the other hand, it is excellent when the urine is decomposed and alkaline. The benefit is so prompt and certain, that if it is delayed there is every probability that there is a complication, *e.g.*, stone, pyonephrosis, diverticulum, etc. The dose employed by Freudenberg[3] is 3 cc. of a 10 per cent iodoform glycerin injection. This is mixed with 40 cc. of boric acid or silver nitrate solution, and introduced by a catheter into the bladder. The injection should not be given oftener than every second day, and should be immediately stopped if any symptom of intoxication appears.

Andry[4] thinks that in many cases so-called **Iodoform Rashes** are really due to the simultaneous use of iodoform and mercury, which combine to form an irritating compound.

Gessner[5] recommends the treatment of early cases of **Phthisis** by direct injections of emulsions of iodoform. The patient is kept in bed for four to six weeks, and in combination with ordinary physico-dietetic therapy, every ten to fourteen days 5 grams of a 10 per cent glycerin emulsion of iodoform is injected directly into the affected lung. A fine needle is used, and for apical lesions it is introduced two or three finger-breadths from the sternum (about the level of the first or second rib) and at an angle outwards of 45°. For the lower lobes injections should be made in the sixth intercostal space at the angle of the scapula. In early cases the results are extraordinary, while even in advanced cases the injections do good by limiting the secretions. For a short time after the injection there may be pain, but this is probably due

to the glycerin, and might be avoided by substituting liquid paraffin for it.

REFERENCES.—[1]*Deut. Med. Woch.* No. 35, 1903; [2]*Cent. f. Chir.* No. 36, 1903; [3]*Deut. Med. Presse*, No. 21, 1903; [4]*Monats. f. prakt. Derm.* Bd. 37, No. 1, 1903; [5]*Centr. f. Chir.* No. 16, 1904.

**ISOPRAL.**

Under this name trichlorisopropylalcohol has been introduced as a **Hypnotic** resembling chloral hydrate in its action. Crystallizing in fine prisms, which slowly volatilize, it is of a pleasant camphoraceous odour, and sharp, burning, slightly bitter taste. It is fairly soluble in water, and readily so in a mixture of alcohol and water. It is given in solution, or in the form of pastilles containing 0·5 or 0·25 gram.

Impens[1], from experiments on animals, finds that the action is exerted not only on the cerebrum, but also on the medulla and cord. On the heart small doses have no action, larger doses diminish the work and strength of the isolated frog-heart, acting, however, less strongly than chloral hydrate. The blood-pressure is lowered, from dilatation of the vessels through an action on the vasomotor centre. Toxic doses depress the respiratory centre, but ordinary hypnotic doses have little more effect than normal sleep. Urstein[2] finds that the urine is increased. The drug is excreted chiefly in the form of a combination with glycuronic acid. The toxicity is much less than that of chloral hydrate.

Muthmann[3], in an exhaustive report, states that isopral is a hypnotic rather than a sedative. It induces a desire for sleep, or a sensation of tiredness, which invites repose. This effect is very rapidly induced, within about thirty minutes. It is possible to fight against it, but if the surroundings are favourable, sleep is readily induced without any unpleasant preliminary symptoms. In certain instances diminution of the patellar reflex and a degree of motor incoordination point to a spinal action. The pulse is reduced in rate by 10 to 20 beats, but becomes fuller. Large doses rather tend to increase a pre-existing irregularity. On waking there is no unpleasant after-effect, the appetite is not affected, and vomiting never was noted. For slight cases of nervous sleeplessness, 0·5 gram to 0·75 gram proved sufficient; but the normal dose may be taken as 1 gram. The tablets occasionally cause gastric discomfort, and thus they are contra-indicated in gastric disorders, but even here the watery solution is permissible. Isopral does not seem to have a bad effect on the kidneys, and does not increase albuminuria. The effect of the drug is not very prolonged, yet Ransohoff[4] noted a sedative effect in excited conditions. He recommends isopral (1) in motor excitement, (2) in cases of mild sleeplessness especially if due to depression; and finally it may be used in painful conditions. Its effect is problematic in severe forms of sleeplessness.

Eschle[5] found that it had no effect in diminishing the number of fits in epilepsy. Raimann[6], on testing the drug in 16 cases of restless

excitement, found that it either induced sleep or had no sedative action. Urstein[7] finds isopral twice as active as chloral hydrate, but less toxic, and more powerful than trional and paraldehyde. He states that it is about as powerful as veronal. The use of frequent doses does not necessitate an increase of dose, and the after-effects are less than with most other hypnotics.

REFERENCES.—[1]*Ther. Monats.* 9 and 10, 1903 ; [2]*Ther. d. Gegenw.* Feb. 1904 ; [3]*Münch. Med. Woch.* No. 32, 1904 ; [4]*Psychiat-Neur. Woch.* No. 48, 1904 ; [5]*Forts. d. Med.* No. 6, 1904 ; [6]*Heilkunde*, No.3, 1904 ; [7]*Ther. d. Gegenw.* Feb. 1904.

## LIGHT THERAPY.

Motschan used *red light* with success in a severe case of **Noma** of the cheek and lip[1]. The light was obtained from a 16-candle-power incandescent lamp with red glass, and fitted with a conical reflector. It was kept continuously lit day and night at a distance of about 8 inches from the diseased surface. After three days' exposure the patient was able to open his mouth freely, and the pain had ceased ; it returned when the light was removed. The secretions began to dry up, and healthy granulation tissue appeared, and the wound gradually healed.

Rahm[2] has used this form of treatment in two epidemics of **Small-pox.** He believes that the effect of the red light on the course of the pocks is of great importance. Even severe confluent cases leave the hospital with only red marks, which gradually fade, leaving almost no pits.

On the other hand, Brayton[3], from his experience in treating 300 cases of small-pox, finds that red light has absolutely no effect on the course, complications, or formation of cicatrices.

REFERENCES.—[1]*Wien. klin.-ther. Woch.* Nos. 21 & 22, 1904 ; [2]*Cor.-Blatt. f. schweiz. Aerzte.* No. 7, 1904 : [3]*Jour. Amer. Med. Assoc.* July, 1903.

## MAGNESIUM, PEROXIDE OF.

Berther and Gaultier[1] recommend the administration of this drug in the form of pills coated with keratin in the treatment of **Acid Diarrhœa.** In such cases the reaction of the stools is acid, and the gastric acidity is greatly increased. The peroxide of magnesium exerts a marked action as an anti-diarrhœic and antiseptic It is well to treat the gastric acidity at the same time with alkaline salts.

REFERENCE.—[1]*Bull. de Thér.* June 15, 1904.

## MANGROVE BARK.

Dyer[1] discusses the action of this drug in **Leprosy.** The preparations employed are a watery extract, a dried extract made by percolation, salves made from the powdered bark, and the powder used in baths. Of the extract 10 grams were given night and morning, and gradually raised till 80 to 100 grams are taken daily. From Havana, Duque and Moreno report favourably of the drug. They claim that in early cases improvement is shown in from six to ten months, while more advanced cases improve but do not cure. The American test cases treated at the Louisiana Leper Home were not very successful.

REFERENCES.—[1]*Jour. Cut. Dis.* Feb. 1904 ; *Brit. Med. Jour.* Feb. 20, 1904.

**MARETIN.**

This drug is a methylated acetanilide. It is a crystalline powder soluble in 42 parts of boiling water. It has been favourably reported on by Berjansky[1] and Elkan[2]. The latter states that he has tried it in the various stages of **Phthisis,** and finds it a reliable antipyretic. It reduces the temperature promptly, but the fall induced is gradual. He has noted no unpleasant effect on the respiration or digestion. The drug does not cause sweating. There is no cumulative action, the patients do not become accustomed to it, and it may be used for long periods without the antipyretic effect being lost. The usual amount required is a single dose of 0·5 gram, or two doses of 0·2 gram, given as a powder and washed down with a drink of water. It is cheaper than pyramidon.

References.—[1]*Berl. klin. Woch.* No. 23, 1904; [2]*Munch. Med. Woch.* No. 30, 1904.

**MERCURY.**

Almkvist[1] by histo-chemical methods has endeavoured to trace the course of mercury in the tissues. Mercury sulphide is formed by the action of the sulphuretted hydrogen of the bowel, and may be demonstrated in the blood, lymph, and intestinal walls. The sulphide granules are absorbed by the leucocytes, and carried by them between the epithelial cells lining the intestine.

Hydrargyrum Hermophenylicum $C_6H_2O(SO_3Na)_2.Hg$ has been warmly recommended by French writers. It is made by dissolving the oxide of mercury in bisulphite of carbolic sodium, and occurs as a white amorphous powder containing 40 per cent of mercury. It is freely soluble in water. Though it is said not to irritate the tissues or produce poisonous symptoms, Seegall[2] was unable to confirm this. He finds that it is unreliable in its action, and not such a valuable remedy as the perchloride or the insoluble salts of mercury. It was also useless as an injection in gonorrhœa.

Hydrargyrum Perchloride.—Fabio[3] saw excellent results from the intravenous injection of small doses of corrosive sublimate in a case of **Puerperal Fever.** The amount injected was so small that the good effect cannot have been directly due to an antiseptic action, but rather to a stimulant effect on the defensive powers of the body.

Iodide of Mercury is one of the most potent antiseptics known. According to Koch it acts on most germs in the dilution of 1–50,000. When calomel is given internally, and iodine is applied locally, iodide of mercury is said to be formed. Stabler[4] claims to have produced brilliant effects by using this reaction. For treating mucous membranes he gives calomel internally, and sprays the mucous membrane with a solution containing tincture of iodine (1 drachm), glycerin and water (of each ½ ounce), with a little carbolic acid and belladonna added as sedatives. For inflammatory conditions of the skin, boils, carbuncles, etc., calomel is given internally, and lint soaked in a

preparation containing iodine is applied to the part and covered with rubber tissue.

Enesol.—Coignet[5] brings forward a new salt, a compound of the basic salicylate of mercury and methyl-arsenious acid, to which this name has been given. A white amorphous salt is formed which is fairly soluble in water, and the solution is capable of being boiled without decomposing. Both the arsenic and the mercury are in a state of organic combination, and do not give the ordinary reactions. The toxicity of the drug is very feeble, though it contains 38 per cent of mercury and 14 per cent of metallic arsenic. For clinical purposes a solution of 3 cgrams in 1 cc. of water is employed. As a rule 2 cc. of this strength were injected intra-muscularly into the buttocks every day. The injections are almost painless, and cause no irritation nor discomfort. The elimination of the drug is rapid, being especially marked about the second hour. Coignet has given over 800 injections without having any accident. In curative action it does not differ from the benzoate, biniodide, and other salts. As a rule, about twenty to thirty injections were required to cure a **Chancre.** The remedy failed in two out of twenty cases of late **Secondary** manifestations. The tonic action of the arsenic has an excellent effect on the blood and general nutrition. Breton confirms the claims of Coignet as regards its activity and non-irritant properties. He states, however, that in certain cases of **Cerebral Syphilis** it is not well borne. It seems to have a special selective influence on the central nervous system, especially on the medulla, and in some cases causes cerebral excitement, sleeplessness, and distinct aphrodisiac action. In one patient, a tabetic, who had been impotent for eight years, it induced persistent erections and pollutions.

Merkuriol Oil.—This is a preparation made by mixing an amalgam of mercury, aluminium, and magnesium with anhydrous lanolin and almond oil[6]. It is then combined with olive or almond oil till it contains 45 per cent of mercury. It is an energetic remedy, and if injected intramuscularly causes little irritation. The preparation is permanent and of homogeneous strength. The dose is from one to two divisions of Lange's syringe. As the amalgam readily decomposes in the presence of even traces of water, it is necessary to have the interior of the syringe absolutely free from moisture.

**Mercurial Rashes** can take on many different forms, simulating measles, scarlatina, erysipelas, as well as purpura, erythema multiforme, and pemphigus. The form of the rash is quite independent of the preparation and the method of administration. Tomasczewski[7] recognizes three types of mercurial idiosyncrasy. In the first there is implication of the skin, with or without fever. In the second group there is polyneuritis. In the third group there is fever without implication of the skin, glandular structures, or intestinal canal. This form only appears after hypodermic injections.

References.—[1]*Nord. Med. Arch.* No. 6, 1903; [2]*Berl. klin. Woch.* Oct. 19, 1904; [3]*Gaz. deg. Osped.* April 24, 1904; [4]*Med. News,* June 25, 1904; [5]*Lyon Mêd.* No. 23, 1904; [6]*Arch. Derm. u. Syph.* Bd. lxvi, Hft. 1 & 2; [7]*Zeits. f. klin. Med.* Bd. li, Hft. 5 & 6.

## METHYLENE BLUE.

Fischer[1] strongly recommends the use of this drug as a means of facilitating cystoscopic examination of the bladder. Two hours before the examination 7½ grs. in capsule are given. At the examination, the urine is drawn off with a catheter, and the bladder washed out with saline solution till the fluid returns clear. The ureters are now easily demonstrated, since they secrete a blue cloud of urine. Similarly any ulcerated patches or papillomatous tissue appears blue, as the abnormal tissues seem to be very readily stained.

Reference.—[1]*Münch. Med. Woch.* No. 14, 1904.

## MORPHINE.

Tyson[1], in discussing the use of morphine in **Uræmic Convulsions,** insists on the difference in its action in parenchymatous and interstitial nephritis. Morphia is only dangerous in chronic interstitial nephritis, since the excretion is here very slow. On the other hand, in parenchymatous nephritis, on which most uræmic cases depend, the drug is as rapidly excreted as in health; hence it can be used with brilliant results. This explains also the good results obtained in puerperal convulsions which occur in connection with parenchymatous nephritis.

Grassmann[2] pleads for a larger use of morphine in **Circulatory diseases.** He shows that on the normal heart morphine has no depressing influence, and that, therefore, there is no reason to expect that its influence will be more depressing in diseased conditions. Sudden deaths do occur after using morphine, but they are probably due to the disease, and not to the drug. Grassmann holds that morphine may be safely used for even severe subjective symptoms of dyspnœa, restless excitement, and sleeplessness, provided they are not associated with a manifest impairment of compensation. It is useful in severe pseudo-anginous and paroxysmal tachycardiac attacks. He does not recommend morphine in acute inflammation of the lung, or in pericarditis, or endocarditis where the effusion is increasing. In acute inflammatory conditions of the endocardium and myocardium, it should only be used with caution. In chronic affections of the heart and arteries, its beneficial effects are most evident. Pain and persistent dyspnœa and sleeplessness may indicate its use. In many cases the relief obtained is not merely subjective, but is more lasting in its nature. Thus, the restless tossing of the patient is checked, the strain on the heart is lessened, and the action of digitalis may then be obtained. Grassmann believes strongly in this use of morphine, as a preliminary to the exhibition of **Digitalis.** It requires

only very small doses, and is absolutely safe. He has frequently noted Cheyne-Stokes manifestations improve under morphia.

Rosenbach[3] agrees with most of Grassman's conclusions.

REFERENCES.—[1]*Ther. Gaz.* No. 3, 1904; [2]*Münch. Med. Woch.* No. 28, 1904; [3]*Ibid*, No. 33, 1904.

**MUSK.**

Crookshank[1] speaks well of this drug in acute specific infections resulting in toxic involvement of the central nervous system. It is only of use when the nervous centres are involved. Only the best grade of musk should be used, though this is expensive and difficult to obtain. The dose is 5 grs. about every two hours.

REFERENCE.—[1]*Ther. Gaz.* March, 1904.

**NAPHTHALAN.**

Voges[1] warmly recommends this ointment for relieving the pain and discomfort of **Mosquito Bites.** The affected part should be energetically rubbed so that the ointment is absorbed by the skin. The pain is immediately relieved, but the swelling persists for some time. If a fresh sting is rubbed with naphthalan, no swelling develops. Applications to the face and hands may be used as a prophylactic measure in infected districts.

REFERENCE.—[1]*Aerzt. Runds.* No. 12, 1904; *Therapist*, Sept. 1904.

**NARCYL.**

This is introduced as a new nervous sedative[1]. Chemically it is a chlorhydrate of ethyl narcein, soluble in hot and cold water. It does not depress the heart and respiration in therapeutic doses, and causes neither nausea nor vomiting. The kidneys are not irritated. Reflex excitability is diminished, the drug acts as a general sedative, and can be used to allay cough. Owing to a marked analgesic action it is useful locally to allay pain.

REFERENCE.—[1]*Arch. Gén. d. Méd.* Feb. 23, 1904.

**NEURONAL.**

Fuchs and Schultze[1] have systematically studied the action of the acetamide group. They found that whereas the ketones had no action, the ketoximes have a hypnotic action, but are not utilizable as such, since they cause spasms and diarrhœa. On the other hand, the acetamide group gives us a series of useful **Hypnotics.** The best are those in which bromine has been introduced into the acetic acid portion of the compound. The most satisfactory preparation was found to be brom-diethyl acetamide, or neuronal. $\begin{cases} Br \\ C_2H_5—C<NH_2\ CO \\ C_2H_5 \end{cases}$

It is a crystalline substance, soluble in alcohol, oils, ether, and in 115 parts of water. On dogs it exerts a powerful hypnotic action, which, though somewhat less than that of veronal, surpasses most other

hypnotics, *e.g.*, chloral hydrate, amylene hydrate, sulphonal, trional, and paraldehyde. After an extensive trial on human beings it is claimed that the new preparation is a safe and good hypnotic, which does not exert any unpleasant side-action. It has a general dose of 1 gram (15 grs.), but in mild cases of sleeplessness half this amount is sufficient; obstinate cases require 1·5 to 2 grams. It often exerts a favourable influence on headache. The preparation is relatively rich in bromine (= 41 per cent), and as this bromine is slowly excreted, it is possible that neuronal may be of use in **Epilepsy**. The limited experience of the authors is in favour of this view.

Siebert[2] finds it an excellent hypnotic in cases of insomnia and mental excitement, especially in epileptics. It is free from unpleasant side-action.

Becker[3] used it in fifty cases in doses varying from 0·5 to 2 grams. Mostly a dose of 1 gram was employed. It is well borne, but is bitter and somewhat unpleasant in taste. The hypnotic effects were highly satisfactory. In simple insomnia 0·5 gram caused sleep within twenty minutes, which lasted from six to eight hours. In slight cases of mania and hallucinations 1 gram was required, while severer cases of mania required 1·5 to 2 grams, and even this amount did not always ensure a complete night's quiet. In paralytic excited states neuronal was uniformly successful, and also in senile dementia with slight restlessness. Small doses of 0·5 gram were very successful in producing quiet and sleep in imbeciles. Beyond one instance, in which the drug caused vomiting, no disturbance of the genito-urinary tract was noted. It did not produce rashes, nor was a cumulative effect noted, though in some cases a certain habituation to the drug becomes noticeable, necessitating increase in the dose. It appears to be a serviceable and innocuous hypnotic, which can be exhibited for prolonged periods without producing any untoward effect.

References.—[1]*Münch. Med. Woch.* No. 25, 1904; [2]*Psychiat.-Neur. Woch.* 1904; [3]*Ibid*; *Therapist*, Sept. 1904.

**OILS.**

Boissel[1] recommends a simple plan for effectually concealing the taste of oily substances, as castor oil, cod-liver oil, etc. He uses a powder composed of gum acacia, liquorice, and marshmallow, flavoured with vanilla. This is mixed with a little water, and rapidly shaken or beaten till a thick froth is formed. The oil is poured into the froth, and can then be swallowed without the taste being perceived.

Cohnheim[2] finds large doses of *olive oil* useful in diseased conditions of the stomach or duodenum. Spasm of the pylorus due to fissure or ulcer was much relieved by daily administration of 100 to 150 cc., while even in malignant cases the oil cure causes considerable improvement. The oil is given thrice daily, half to one hour before food, either swallowed or injected through a tube.

References.—[1]*Quinz, Thér.* July 25, 1904; [2]*Zeits. f. klin. Med.* Bd. lii, Hft. 1 & 2.

**OSMIC ACID.**

Wright[1] has used injections of this drug in **Neuralgia.** He does not inject at random through the skin, but exposes the nerves, and then injects a 1½ to 2 per cent aqueous solution into the *nerve trunk* or branches. The injection is sometimes made both towards the periphery and centre; as a rule some of the solution escapes out of the nerve and bathes the surrounding tissues. The immediate results are harmless, and give at any rate temporary relief, and the injection should be tried before resorting to serious surgical operative procedures. In some cases relief is not immediate, but the pain continues for some days and then passes off gradually.

REFERENCE.—[1]*Med. Chron.* Feb. 1904.

**OXYGEN.**

Injections into the infiltrated tissues surrounding **Anthrax Pustules** and **Carbuncles** are said to cut short the spread of the inflammation. If used at an early stage, an oxygen injection will abort a **Boil.**[1]

REFERENCE.—[1]*Quinz. Thér.* July 25, 1904.

**PARAFFIN.**

Eckstein[1] recommends the injection of a plug of hard paraffin in the treatment of direct inguinal and umbilical **Hernia.** The paraffin forms a plug over the ring, and enables the patient to dispense with a truss. It is less efficient in the indirect form of inguinal hernia.

Burgess[2] has had excellent results from the use of paraffin injections in cases of **Prolapse of the Rectum.** In none of his eighteen cases was there a relapse. The method is simple and rapid, and makes no demand on the patient's strength. The benefit is immediate, and even if the procedure fails completely, the patient would be in no worse plight than before.

Fleiss[3] has used injections of hard paraffin into the lower turbinate in twelve cases of **Atrophic Rhinitis** with ozœna. In every case great improvement was obtained, but not a definite cure. The odour partially disappeared, as well as the crusts. The results obtained with paraffin were better than those with any other form of treatment. He holds that there is a connection between the abnormal wideness of the nasal passage and the ozœna. He, therefore, injects the paraffin into the lower turbinate, so as to narrow the passage.

Moure and Brindel[4] treated 70 cases of atrophic rhinitis with submucous injections of paraffin into the lower turbinate, and in certain cases into the submucous tissue of the septum and floor of the nose also. In 62 per cent of the cases they obtained a cure, while in 26 per cent improvement as regards ozœna and crust formation was effected, though there was still formation of a sticky secretion. In the remaining 11 per cent no effect was produced. The results in some cases have lasted eighteen months, and appear to be permanent.

REFERENCES.—[1]*Centr. f. Chir.* No. 36, 1903; [2]*Lancet*, Sept. 10, 1904; [3]*Berl. klin. Woch.* No. 10, 1904; [4]*Rev. Hebdom. de. Laryng.* No. 41, 1903.

**PERU BALSAM.**

Grassmann[1] has reported a case of *severe nephritis* following the use of an ointment containing equal parts of Peru balsam and vaselin, by a man, æt. twenty-six, suffering from scabies. The ointment was applied on two following nights, each time about 25 grams of the balsam being used. Two days after the second application, nephritis set in with œdema, and albumin, blood, and casts in the urine. Only two similar cases are reported.

Van Stockum[2] treats **Compound Fractures** with balsam of Peru. Foreign material is removed with sterile forceps, but the wound is not washed or disinfected. Balsam of Peru is poured copiously into the wound, and the limb is moved a little to promote penetration of the balsam. After reduction the wound is dressed with gauze soaked in the balsam, and put up in plaster for three weeks. The temperature rises at first, but subsides in four or five days. At the end of three weeks the dead tissues are found mummified, and the wound is granulating normally.

REFERENCES.—[1]*Münch. Med. Woch.* No. 30, 1904; [2]*Ther. Gaz.* June, 1904.

**PETROLEUM**

Binkerd[1] believes that in the finest grades of crude petroleum we have a valuable remedy for acute affections of the **Respiratory Tract.** It acts as a mechanical lubricant. It is also a valuable intestinal anti-ferment. It does not upset the stomach or bowels, though it acts as a mild purge. The gastric and intestinal juices do not affect it, and it is not absorbed. He has found it useful in typhoid fever when given in half teaspoonful doses. The remedy is entirely safe, and has the advantage of being cheap.

REFERENCE.—[1]*Ther. Gaz.* Dec. 1903.

**PHENYL-PROPIOLATE OF SODIUM.**

This new drug is closely related to cinnamate of sodium. It differs from it in containing 2 atoms less of H.

Cinnamic acid $= C_6H_5—CH=CH—CO\,OH.$

Phenylpropiolic acid $= C_6H_5—C \equiv C—CO\,OH.$

Bulling[1] has introduced this drug as a suitable spray for the treatment of **Tubercular Laryngitis** and **Phthisis.** The strength is at first ½ per cent. This is inhaled twice a day for half an hour at a time. The initial temperature of the spray should be 20° to 25° and 30° C. In a few minutes this should be raised to 42° to 43°. The high temperature tends to produce hyperæmia, which increases the bactericidal action of the spray. For the last five minutes of the inhalation, the temperature should be reduced to about 35°. For an hour afterwards the patient should remain quiet and avoid speaking. The strength of the solution can be gradually increased from week to week to 3 per cent. Sometimes increase of strength leads to slight signs of irritation, fever,

increased catarrh and sputum. They pass off rapidly without necessitating any diminution of dose.

Elkan and Weismüller[2] have tried the inhalations in 13 cases, representing all stages of phthisis. On the whole the results are favourable, particularly in the laryngeal condition. In some of the cases the bacilli disappeared from the sputum. The inhalation apparently penetrates right into the lung tissue, since for several hours afterwards the patients are conscious of the taste, and the expectoration has the characteristic odour of the drug.

REFERENCES.—[1]*Münch. Med. Woch.* No. 17, 1904; [2]*Ibid*, No. 18.

**PHYSOSTIGMINE**

This drug has been warmly recommended to overcome the annoying meteorism, which occasionally results from paralysis of the intestines following abdominal operations. Pankow[1] has attempted to find out the exact value of physostigmine in such cases. In 210 cases of laparotomy he finds that flatus was passed within twenty-four hours of the operation by twenty-two patients. Injection of eserine sulphate did not increase this number in a parallel series of cases, so that Pankow believes that physostigmine is of no value in cases of meteorism.

Vogel[2], who has used it as a prophylactic against intestinal paresis following laparotomy, firmly believes in the efficacy of this treatment. He uses $\frac{1}{60}$ grain of physostigmine salicylate immediately after the operation.

REFERENCES.—[1]*Münch. Med. Woch.* No. 30, 1904; [2]*Centr. f. Gyn.* May 28, 1904.

**PICRIC ACID.**

Stuart Rose[1] has observed in two cases symptoms of poisoning after the use of an ointment for burns, containing 7 per cent of picric acid. About two days after the application the patients complained of weakness, vomiting, headache, and slight fever. The skin became yellow in colour, and the hairs were also affected. The urine contained albumin, but neither blood nor bile pigment, though it was dark brown in colour. No intoxication phenomena have been noted after the use of 1 per cent solutions.

REFERENCE.—[1]*Scot. Med. and Surg. Jour.* Dec. 1903.

**PILOCARPINE.**

Pelzl[1] strongly recommends the use of pilocarpine in **Croupous Pneumonia.** He gives by the mouth 20 minims of a 1 per cent solution. This causes a marked diaphoresis. As a rule the remedy is given only once on the second day of treatment. He has treated 33 cases by this method, and finds that in one half of them the crisis occurred within forty-eight hours of administering the pilocarpine, while another third show a transient fall of temperature. The outbreak of sweating makes the patient feel more comfortable. The dyspnœa diminishes,

and the pain of the coughing is relieved, while the expectoration is much more easy. Frequently it causes sleep lasting several hours. All the cases recovered.

REFERENCE.—[1]*Wien. Med. Presse*, No. 37, 1903.

**PNEUMIN.**

This is a creosote preparation formed by allowing formaldehyde to act on creosote. It occurs as a yellow-white powder, having little smell and taste. Patients take it readily in doses of ½ gram thrice daily. It has a favourable action on the appetite and digestion in phthisis. Sigel[1] prefers it to other creosote preparations, as it is easily administered and cheap.

REFERENCES.—[1]*Berl. klin. Woch.* Jan. 4, 1903; *Brit. Med. Jour.* Feb. 6, 1904.

**PODOPHYLLIN.**

Neumann[1] recommends podophyllin instead of calomel in the treatment of **Ankylostoma Duodenale.** He considers that podophyllin has an effect on the epithelium of the mucous membrane of the intestine. It changes the epithelium so that the worms can no longer attach themselves to the intestinal walls. The action of podophyllin is more specific than that of calomel, and less dangerous. Where podophyllin fails to act, a dose of male fern may be given to dislodge the worms.

REFERENCES.—[1]*Deut. Med. Woch.* Jan. 28, 1904; *Brit. Med. Jour.* March 19, 1904.

**POTASSIUM CHLORATE.**

This drug has been warmly recommended for catarrh of the bladder. As a rule it is very effective, and in medicinal doses of 4 to 7 grs. or 90 to 120 grs. per diem it rarely causes any deleterious effect. If, however, there is any obstruction to the urinary flow, there is danger of **Poisoning.** This is well shown in two cases reported by Quincke.[1] In the case of a man, aged fifty-seven, with catarrh of the bladder and moderate enlargement of the prostate, 4 grs. three and then eight times daily caused intoxication. After the use of 120 grs. in forty-eight hours, the urine became brown from the presence of methæmoglobin, and contained increased albumin. There was slight jaundice and vomiting. Although the urinary change disappeared, the patient died in seven days, and *post-mortem* there was discovered chronic cystic degeneration of the kidneys. The second case was similar. A man suffered from retention of urine due to enlarged prostate. While using a catheter the bladder became infected, and for this potass chlor. 45 grs. daily, was given. After five days the urine became brownish, there was jaundice, and the general condition became worse. The drug was stopped, but death occurred next day. The liver cells showed accumulations of iron from altered blood pigment. Both kidneys showed hydronephrosis.

P. Barthalow[2] states that potassium chlorate passes almost unchanged through the body. Without doubt it may sometimes produce

sudden toxic effects. The composition of the blood may be profoundly altered even after comparatively small doses. It seems to be most dangerous if taken on an empty stomach. In several instances under these conditions a small dose has caused death.

REFERENCES.—[1]*Deut. Arch. f. klin. Med.* Bd. lxxix, Hft. 3; *Deut. Med. Zeits.* May 5, 1904; [2]*Jour. Amer. Med. Assoc.* April 23, 1904.

**POTASSIUM PERMANGANATE.**

Mori[1] used this drug with success in a case of snake-bite in a boy of fourteen. The boy was very deeply affected, with complete ptosis, and mydriatic pupils which did not react to light. Two injections of a 1 per cent solution of the drug were made in the region of the wound, and one into the median cephalic vein. The patient made an uninterrupted recovery. The action of the drug is possibly an oxidizing one, in addition to the antiseptic effect.

Rogers[2] finds that the drug rapidly destroys the toxic action of most poisonous snake venoms, if mixed with them *in vitro*; the salt destroys nearly its own weight of every class of snake venom. In animals, he has been able to show that after injection of the venom local extravasation of blood-stained serum occurs within half a minute. This extravasation indicates clearly the position of the poison, and the potassium permanganate crystals should be rubbed in over this till the tissues are blackened. Combined with ligature, this local destruction of the poison seems to promise well in snake bites.

REFERENCES.—[1]*Gaz. deg. Osped.* March 6, 1904; [2]*Lancet*, Feb. 1904.

**PURGATIN.**

Frank[1] has carefully studied the action of purgatin on thirty women during the puerperium. He finds that in eight cases the children suffered from colic, and in a certain proportion of the cases there were albuminuria and casts. Therefore he concludes that purgatin is not a suitable purgative for nursing mothers, or those suffering from disease of the kidneys.

REFERENCE.—[1]*Centr. f. d. gesam. Ther.* No. 4. 1904.

**PYRAMIDON.**

In some cases of obstinate **Headache** it is impossible to use antipyrin owing to the appearance of urticarial rashes. In such cases the exhibition of small doses of pyramidon, 4 to 5 grs., frequently relieves the headache without producing urticarial symptoms.

REFERENCE.—[1]*Bull. de Thér.* May 30, 1903.

**PYRENOL.**

This is a compound[1] of sodium benzoylthymylate and benzoylooxybenzoic acid. It is a white powder of aromatic odour and sweetish taste, and is soluble in water. Burchard[2] has examined the action of this preparation in **Asthma** and **Neuralgic** conditions. His results are very satisfactory. For adults he employs tablets containing 0·5 gram. Of these two or three are given in the day. A watery solution, 5 grams

in 100 cc., may be used instead in tablespoonful doses thrice daily. For children a 3 per cent solution flavoured with syrup may be used in teaspoonful doses from two to six times in the day.

References.—[1]*Pharm. Post*, No. 32, 1903; [2]*Deut. Aerzt. Ztg.* Hft. 20 1903.

**QUININE.**

As a convenient formula for **Injections**, Aufrecht[1] recommends :—

| | | | |
|---|---|---|---|
| R Quin. hydrochlor. | 0·5 | Aq. destill. | 5·0 |
| Urethane | 0·25 | | |

The urethane increases the solubility of the quinine.

Fulton[2] strongly recommends the local use of quinine in **Hay Fever** as remarkably effective. He sprays the nose with a saturated solution of quinine sulphate in distilled water, and then applies an ointment containing 30 grs. of quinine to the ounce of vaselin. The ointment must be applied at least every six hours, while the spray may be used two or three times a day when the irritation is at its maximum. The ointment should be applied at bedtime and once in the middle of the night if there is any risk of nocturnal attacks.

References.—[1]*Ther. Gaz.* July 15, 1903; [2]*Ibid*, Aug. 15, 1904.

**RESORCIN.**

Clark[1] believes that resorcin is almost infallible in the inflammatory stage of **Eczema** accompanied by itching, burning, or smarting. It affords almost immediate relief, soothing the irritation and reducing the inflammation. It may be employed either as a solution or as an ointment. A 4 per cent solution is made by dissolving 20 grains in an ounce of water. As a rule this strength is sufficient. It should be applied on strips of linen or lint cut to the required shape and lightly covered to keep it in place. The solution may be renewed indefinitely. The use of an ointment is preferable. To each ounce of zinc ointment or cold cream add 20 grs. of resorcin. Sometimes 4 to 10 grains of salicylic acid may be advantageously added. In preparing the ointment the resorcin and salicylic acid should be dissolved in alcohol and added to the heated zinc ointment, and stirred till cold. Resorcin is an excellent palliative for eczema, but should be combined with constitutional treatment. Stains on linen, etc., may be removed by strong soap-suds.

This substance is usually held to be but very slightly toxic. Dalche[2] reports a case which seems to bear this out. A child, five years of age, swallowed by mistake 2 grams of resorcin dissolved in glycerin. There was pallor, collapse, and coldness. The urine passed was absolutely black, but contained no indican, sugar, or albumin. The symptoms passed off in three days or so.

References.—[1]*Bost. Med. and Surg. Jour.* May 5, 1904; *Ther. Gaz.* July, 1904. [2]*Bull. Gén. de Thér.* April 15, 1904.

**RHEUMASAN.**

This new anti-rheumatic is a super-fatted soap cream containing 10 per cent of free salicylic acid. It is of a pleasant odour, and is readily absorbed through the skin. Koebisch[1] used it in twenty-five cases, including chronic rheumatic polyarthritis, lumbago, sciatica, gout, neuritis, and locomotor ataxia. In the rheumatic affections the preparation acted well, while it cured the pain in one case of locomotor ataxy, but failed in two others. It also failed in a case of trigeminal neuralgia, in a hemiplegia, and in a case of arthritis of the elbow joint. The method of application is to rub about 10 grams over a large surface, and cover this with wool. The part should be rubbed only once in twenty-four hours, otherwise the skin is apt to become irritated.

Behr[2] finds this a useful preparation for the minor ailments of phthisical patients. The oral administration of drugs is apt to interfere with the appetite and upset digestion ; hence some form of external local treatment is advantageous. Rheumasan can be applied daily for weeks without causing any unpleasant effects. It does not cause albuminuria. The actual amount of the salicylic acid absorbed cannot be determined, but the speedy appearance of the salicyl reaction in the urine, and the marked therapeutic results, show that the absorption must be considerable. The drug should not be used more than once a day, as otherwise it may upset the patient. Behr has found it useful in acute muscular rheumatism, acute and chronic rheumatic arthritis, neuralgia, lumbago, pleurisy, and migraine.

REFERENCES.—[1]*Deut. Med. Woch.* Sept. 17, 1903 ; *Brit. Med. Jour.* Jan. 2, 1904 ; [2]*Ther. Monats.* ; *Brit. Med. Jour.* July 23, 1904.

**RHEUMATIN.**

This preparation, the salicylate of salicyl-quinine, has been used by Sigel[1] in about forty cases. The daily dose ranged from 2 to 6 grams. It acts in acute rheumatism as a specific, rapidly reducing pain and temperature. It is certainly as active as the other salicylate compounds. Sigel did not observe any development of unpleasant side effects, except occasional singing in the ears. The heart and kidneys are not affected.

REFERENCE.—[1]*Berl. klin. Woch.* Aug. 3, 1903 ; *Brit. Med. Jour.* Oct. 31, 1904.

**RODAGEN.**

This preparation is obtained by precipitating with alcohol the milk of animals, chiefly goats, from which the thyroid has been removed. Kuhnemann[1] has used it with great success in a case of **Exophthalmic Goitre,** in doses of 2 grams thrice daily. The immediate effect was shown by the increase of weight and improvement of the cardinal symptoms: tachycardia, struma, tremor, and exophthalmos.

REFERENCE.—[1]*Münch. Med. Woch.* No. 10, 1904.

**SALACREOL.**

By acting on salicylic acid with creosote, a brown, oily, neutral fluid, almost odourless, is obtained. Insoluble in water, it dissolves in alcohol, ether, and chloroform. It is readily absorbed, especially by regions rich in fat, and splits up in the tissues, salicyluric acid appearing in the urine. The skin must be quite dry, otherwise an emulsion is formed which is not absorbed. The drug is used in **Rheumatic Affections** and in **Erysipelas, Rheumatoid Arthritis,** and chronic or acute **Lymphadenitis.**

REFERENCE.—[1]*Ther. Monats.* July, 1903; *Brit. Med. Jour.* Oct. 3, 1903.

**SALINE PURGATIVES.**

The usual explanation of the action of saline purgatives is that they are salts which are not easily absorbed from the intestine, but remain in the intestine causing a moderate irritation and secretion of fluid. This fluid the saline salts retain in the intestine by a process of osmosis. When the fluid reaches a certain bulkiness the mechanical distention acts as an irritant to the bowels, causing evacuation of the intestinal contents.

McCallum[1] has published a series of experiments which tend to show that this explanation is not wholly satisfactory. He finds that the saline purgatives act equally well when injected into the veins, or when administered hypodermically. The effect of the injection is to cause a rapid secretion of fluid into the gut, and increased peristalsis. As the peristalsis occurs more quickly after the injections than when the salts are given by the mouth, he concludes that in the latter course the salt must first be absorbed before it can act on the intestine. The purging action is to be ascribed to the production of a hyper-sensitive condition of the nervous system controlling the muscular coats of the intestine. Larger doses of the saline drugs produce a general increase in the neuro-muscular irritability of the voluntary muscles. McCallum[2] has found that the active peristalsis produced by the intravenous injection of a minimal dose of a purgative sodium salt can be almost entirely suppressed by the subsequent injection of an equivalent quantity of calcium chloride solution. This seems to show that purgation is due to the abstraction of calcium ions from the tissues.

REFERENCES.—[1]*Amer. Jour. Phys.* Nov. 1903.; [2]*Brit. Med. Jour.* Feb. 6, 1904.

**SALIT.**

This substance, prepared by V. Heyden, is a salicylic acid ester of borneol. It is an oily fluid, insoluble in water and glycerin, but freely soluble in alcohol, ether, and oils. After absorption into the body it is split up by alkalies into salicylic acid and borneol. Therapeutically salit is used mixed with equal parts of olive oil. It is either painted on, or rubbed into, the affected part. In the former case the part is covered with jaconet tissue, in the latter with lint. After application to the skin, salicylic acid is obtained in the urine.

Müller[1] prefers rubbing to painting. He employs ½ to 1 teaspoonful of the olive oil mixture for each application. He applies it twice daily, using in this way from 2·5 to 5 grams of the pure salit. He reports very favourably of its effect in 36 cases, especially in **Muscular Rheumatism,** acute **Neuralgia,** slight **Rheumatic Arthritis,** acute **Rheumatic Pleurisy,** and **Inflammation of Tendon Sheaths.** Even after other salicylic preparations had failed, salit gave good results. The results correspond to those obtained with mesotan, also a salicyl ester. In a very small percentage of the cases the rubbing caused a slight very itchy eczema, not entirely limited to the parts rubbed, but always most intense there. No unpleasant action on the heart or other organs was noted. The smell of salit is less than that of mesotan, and it is free from formaldehyde.

Reference.—[1]*Münch. Med. Woch.* No. 15, 1904.

**SANOFORM.**

This substitute for iodoform is a white, tasteless, and odourless powder. Chemically it is a di-iod-salicylate methyl ester. It contains 62·7 per cent of iodine. It melts at 110·5° C., but resolidifies without change. In contact with living tissues it is slowly dissolved, and traces of iodine and salicylic acid are set free. Bamberg[1] found that sanoform was as powerful as iodoform. He has used it in the form of powder or gauze in 225 vaginal cases and has never met with ill effects. The wounds healed readily. In the vagina, gauze plugs of sanoform were more efficient deodorizers than iodoform plugs.

Reference.—[1]*Berl. klin. Woch.* Sept. 21, 1903; *Brit. Med. Jour.* Dec. 5, 1903.

**SCOPOLAMINE HYDROBROMIDE.**

Korff[1] has somewhat modified the dosage employed in using scopolamine and morphine to induce narcosis. The mixture now used is as follows :—

| | | |
|---|---|---|
| Scopol. hydrobrom. | 0·001 gram | = $\frac{1}{1666}$ gr. |
| Morph. hydrochlor. | 0·025 gram | = $\frac{1}{3}$ gr. |
| Distilled water | 10 cc. | = 169 ♏ |

This mixture is divided into three equal portions, and is injected according to the following plan. One third is given two and a half hours, the second portion one hour and a half, and the last portion half an hour before the operation. The drugs are to a certain extent antagonistic, and in these amounts do not give rise to alarming symptoms. The face is somewhat flushed, and the pulse may become slightly affected, but respiration and kidneys remain unaltered. From an experience of fifty cases, representing the ordinary run of hospital operations on patients of all ages, Korff concludes that this method of inducing anæsthesia is sufficiently safe and certain for most of the operations likely to occur in a general practice, while it has the great advantage of dispensing with the necessity for a trained anæsthetist.

Another great advantage of the method is the absence of vomiting. The patient can receive light food almost up to the time of operation. He also usually sleeps for three or four hours after the operation, so that the immediate pain of the incision is not experienced.

Liepelt[2] strongly recommends this drug for allaying the mental excitement of **Delirium Tremens** and other conditions of mental exaltation. He finds it much more reliable than chloral hydrate and morphine. He uses a solution of 1 cgram in 10 cc. of water. This solution must be fresh and quite clear. As a rule a sufficient dose is from 0·4 0·8 mgrams. As a maximum amount 1 mgram can be given. The sedative action is rapidly developed, and lasts from three to five hours. He has never noticed unpleasant effects, though he has used it largely in the delirium of fever, *e.g.*, typhoid, pneumonia, and in acute motor excitement depending on other causes.

REFERENCES.—[1]*Münch. Med. Woch.* No. 46, 1903; [2]*Berl. klin. Woch.* No. 15, 1904.

**SELENIUM and TELLURIUM.**

At the time of the Manchester beer epidemic, it was suggested that possibly the toxic action was not entirely due to arsenic, but, in part at least, to the presence of selenium and tellurium. Crompton[1] has performed a series of experiments on frog muscle and nerve preparations without being able to throw much light on the subject. The compounds had no direct poisonous action on either the exposed voluntary muscle, or on the motor nerve trunks and end plates. The involuntary muscle fibres of the vessels were not affected, and the drugs were not direct cardiac poisons, though they tended to accelerate the beat of the heart.

REFERENCE.—[1]*Med. Chron.* Feb. 1904.

**SILICON.**

Silicic acid is an integral constituent of the connective tissue. By incineration and estimation of the amount of silicon present, it is possible to make an approximate estimation of the amount of connective tissue contained in any given portion of tissue. Thus in human tissues, the amounts present in 1 kilo of dried tissue are as follows, expressed in mgrams :—

| | | | |
|---|---|---|---|
| Muscle | 24 | Dura mater | 87 |
| Skin | 45 | Fascia | 106 |
| Tendon | 64 | | |

It is also present in gelatin and Wharton's jelly. The younger the child, the greater is the proportion of silicon present in its tissues. To find out the exact action of silicon, Schulz[1] kept healthy individuals for long periods on silicon. There was no change in the action of the respiration, heart, vessels, or lymphatic system. There were, however, uniformly changes in the nervous system. Gradually increasing uneasiness in the head became acute headache, and in some cases

there was a complaint of giddiness. The eyes were burning and painful. While some patients complained of lassitude and sleepiness, others showed irritability and nervousness. The muscular actions became uncertain, the hands trembled, and the whole body became very slack. The skin showed acne and occasionally boils. In one case there was a widespread papular rash, and usually the secretion of sweat was increased. The hairs of the head and beard showed a tendency to fall out, and it seemed as if the nails grew more rapidly. The intestinal tract reacted very markedly. There was uniformly meteorism with pain, and increased peristalsis. The action of the bowels becomes irregular; at times there was constipation, then soft diarrhœic motions of a striking yellow colour. There was often deep-seated dull pain in the bones spreading to the joints

REFERENCE.—[1]*Deut. Med. Woch.* No. 38, 1903.

**SILVER SALTS.** (*See* ARGENTUM.)

**STOVAINE.**

This is a new local anæsthetic belonging to the group of amino-alcohols. It is the hydrochloride of amylene. De Lapersonne[1] has found that it contrasts favourably in its action with cocaine, being much less toxic. It can be used for **Ophthalmic Operations** either as an instillation (4 per cent in normal saline), or as a subconjunctival injection. As an instillation it is rather irritating. Its anæsthetic action develops within two minutes, and extends over the cornea and conjunctiva, so that corneal and lens operations can be performed. Iridectomy is painful. The anæsthesia lasts for about six minutes. The blood-vessels are dilated, there is slight myosis. Subsequently the corneal epithelium may desquamate slightly. On the whole it is inferior as an instillation to cocaine; on the other hand, as a sub-conjunctival injection, it surpasses cocaine in its effect. After previous instillation of cocaine or stovaine, an injection of stovaine produces anæsthesia within a minute, lasting sufficiently long for most operations, such as strabismus cures. Stovaine does not alter the tension of the eyeball.

By combining stovaine and cocaine in the proportion of two to one, a mixture for instilling purposes is obtained which does not irritate the cornea, nor cause alteration in the vessels or tension.

REFERENCE.—[1]*Presse Méd.* April 13, 1904.

**STRYCHNINE.**

Pettey[1] strongly recommends the use of strychnine as an **Evacuant.** In normal evacuation of the bowels two factors are concerned, secretion and peristalsis. In many diseased conditions the reflex activity of the intestine is depressed. Strychnine acting on the sympathetic motor centres, stimulates them, and therefore the muscular fibres throughout the alimentary canal respond more readily and uniformly to any stimulant from inside the canal. Thus if strychnine be combined

with a mercurial, the intestinal canal throughout its entire length is thrown into normal or hyper-normal motion by stimulation of the motor centres. As soon as the mercurial induces secretion, the bowel reacts to the stimulus, and the secreted matter and the contents are quickly moved along. The dose required is $\frac{1}{30}$ to $\frac{1}{8}$ of a grain of strychnine. Young people are more susceptible than old, and short compact persons react more readily than tall loosely-built individuals. The beneficial effects of strychnine are very markedly seen in the case of drug habitués.

If it is required to move the bowels after an operation, a full dose of strychnine should be given an hour before the usual saline. Peristalsis is thus induced, and the saline acts more quickly and more freely. Similarly, when giving mercurials or vegetable cathartics in bilious conditions, it is advantageous to add to each potion $\frac{1}{60}$ of a grain of strychnine.

*Quinine and Strychnine.*—Dapena[2] finds that in dogs there is an antagonism between these two drugs. Animals treated with strychnine endure a dose of quinine equal to double or three times the amount they can stand without strychnine. *Vice versa*, animals treated with quinine can survive double the ordinary toxic dose of strychnine. The author concludes that in all cases of strychnine poisoning, heroic doses of quinine should be administered.

References.—[1] *Ther. Gaz.* July 15, 1904; [2] *Revist. de Med. y. Chir.* Oct. 25, 1903.

## SUPRARENAL PREPARATIONS.

Schücking[1] observed a peculiar **Discoloration of the Skin** after the injection of $1\frac{1}{2}$ cc. of a solution of suprarenal extract (1–100). In seven minutes the skin of the patient became dark blue in colour. The pulse remained strong, but the respiration was superficial. It, however, became deep and regular under artificial respiration, but the blueness did not disappear for half an hour. The patient did not suffer any inconvenience.

Dubois[2] reports a case where injections of the glycerin extract of suprarenal gland caused at first transient improvement in a case of **Addison's Disease.** The sixth injection, however, caused immediately fatal collapse. Two similar accidents have been reported by Boinet[3]. He employed adrenalin. At first the injections did good, but after a few days toxic symptoms developed, which proved fatal in a few hours. The symptoms were collapse, vomiting, general tremor, cyanosis, and constriction of the peripheral vessels. The heart became irregular, and towards the end there was paroxysmal tachycardia. In all the three cases the patients were in a state of extreme weakness when the injections were commenced.

Epinephrin.—Abderhalden and Bergell[4] claim to have obtained a pure preparation of the active principle of the suprarenal gland. They worked on the lines recommended by Abel, but avoided any

oxidation of the free base. In this way they obtained a constant pure crystalline substance, which contains a larger proportion of carbon and keeps better than other preparations. Heated in a capillary tube, the melting point was 212° (corr. 216°) as against 206 to 208° for the preparations of Pauly and Takamine. Dried in a vacuum over sulphuric acid, analysis showed 58·44 per cent C, 7·18 per cent H, 7·56 per cent N, corresponding to the formula $C_9H_{13}NO_3$. The activity of this substance was very high, while the 1-1000 solution, even after prolonged exposure to the air, did not become coloured, but remained as clear as water, which shows that the preparation keeps well.

SUPRARENIN.—Hecht[5] has used suprarenin very extensively in **Nasal** and **Throat** cases. He has never had any unpleasant side action. For nasal work he uses a combination of suprarenin and cocaine, 1–2000 of suprarenin and 10 per cent cocaine. This is applied by means of strips of gauze, which are allowed to remain in contact for a quarter of an hour. If by this time the mucous membrane is not perfectly white, it is again painted with a solution of suprarenin, 1–1000. If the anæsthesia is not complete, a 20 per cent solution of cocaine is applied. He also used suprarenin in place of cocaine in powders and snuffs to reduce swelling and secretion of the nasal mucous membrane. The best combination is :—

| | | | | |
|---|---|---|---|---|
| ℞ | Zinc. sozoiodol | 0·3 | Suprarenin crystal | 0·001 |
| | Menthol | 0·2 | Pulv. sacch. lact. | 10·0 |

For nervous cases, where the menthol and zinc are too irritating, a simple snuff of suprarenin and sugar of milk will be found an excellent symptomatic application.

Aronheim[6] had an unpleasant experience with cocaine-adrenalin injections in the case of an old man of seventy, where its use under strict antiseptic precautions caused a widespread phlegmon and gangrenous degeneration of the tissues.

REFERENCES.—[1]*Münch. Med. Woch.* No. 5, 1904; [2]*Bull. Gén. de Thér.* May 15, 1904; [3]*Sem. Méd.* 1903; [4]*Münch. Med. Woch.* No. 23, 1904; [5]*Ibid*, No. 5, 1904; [6]*Ibid*, No. 14, 1904.

**STYPTOL.**

This is the neutral phthalate of cotarnine. It is a fine crystalline powder soluble in water. In doses of 0·05 gram (about ¾ gr.) thrice daily, it was found by Katz[1] to exert a distinct effect in arresting **Bleeding from the Uterus** in various gynæcological abnormalities. It has also a slight sedative action, and does not produce uterine contractions, so that it may be given in hæmorrhage during pregnancy. Owing to its bitterness it is best administered in the form of tablets, containing 0·05 gram.

Toff[2] also had surprisingly good results with styptol in cases of uterine hæmorrhage, where the patients were unwilling to submit to

operation. In addition to its action in controlling hæmorrhage the drug often exerts a sedative action.

REFERENCES.—[1]*Ther. Monats.* June, 1903; [2]*Deut. Med. Woch.* June 9, 1904.

**SUGAR.**

Toulouse[1] has used sugar in large amounts in various conditions attended with **Emaciation.** The quantity employed varied from 50 to 300 cc. daily, representing for very emaciated people about 8 grams per kilo body-weight. The results were excellent, some patients putting on as much as 13 kilos in a few months. The best action was obtained by combining the sugar with milk (3 litres in a day). The theoretical objections that the sugar might lead to fermentation and gastric disturbance, did not occur in actual practice. With ordinary mixed flesh diet the sugar was given in the form of syrup at the end of the meal. It acts as a saver of the albuminous material, whereas a rich nitrogenous diet in emaciated individuals leads only to increased excretion of nitrogen.

REFERENCE.—[1]*Paris Soc. de Thér.* June 22, 1904.

**SULPHONAL.**

Whatley[1] reports a case of sulphonal poisoning in a gentleman aged fifty. After a single dose of 20 grs. of sulphonal, circular patches of erythema, varying in diameter from a quarter to one inch, appeared over the ankle, knee, elbow and metatarsal joints. There was some œdema. Thirty hours after the erythema commenced there was an exudation of serum.

Hind saw a case of suicidal poisoning in a woman of twenty-seven, who swallowed 365 grains of sulphonal in 5-grain tabloids. She remained unconscious for eight days, with coma, absence of reflexes, retention of urine, and atony of the bowel. There was no hæmatoporphyrinuria.

REFERENCE.—[1]*Lancet*, 1904, p. 1016.

**THEOCIN.**

Sigel[1], from an experience with 20 cases, states that theocin is a reliable diuretic in **Dropsy** of cardiac and renal origin. The action is prompt, and is usually at its height in two or three days. The effect rapidly passes off, but if the drug is stopped for a few days the diuretic action is again very powerful. The dose employed was about 5 grs. two or three times daily. There was no action on the heart or blood-pressure. The one unpleasant effect of theocin is that in a certain number of instances it causes disturbance of the stomach and vomiting. If the drug be given by suppository, containing 5 grs., the vomiting ceases, showing that it was due to a local irritant action, and not to a general intoxication. Sigel has not noticed any stimulation of the nervous system.

Combemale and Vassern[2], from their use of this preparation in seven cases of renal and cardiac œdema, find that it is a powerful

diuretic, but this diuretic action ceases as soon as the dosage is stopped. The drug is apt to cause, in a considerable number of cases, unpleasant symptoms of gastric disturbance. To a certain extent these can be avoided by giving it in milk, and always on a full stomach. If nervous symptoms, headache, vertigo, and oppression occur, it is certain that the drug will have no diuretic action. Further, unless the diuretic effect is produced within three days, it is useless to continue with it. Theocin is not more powerful than diuretin, but is more soluble and less likely to cause nervous disturbance.

Pauli[3] has twice noticed the development of a rash while using theocin.

Suter[4] values the diuretic action of theocin very highly. He points out that it frequently acts where theobromine preparations have failed. The diuresis is very promptly produced, but does not last very long, so that the amount of urine soon falls. Still, for several days the quantity remains above the previous average. The best effects are seen in cardiac cases. In administering it, the drug should be given intermittently, and during the intervals digitalis and other diuretics can be employed. In this way the patient does not become accustomed to the action of the drug. Theocin is best given dissolved in water.

Gutmann[5] finds theocin useful in cardiac cases in children. It acts even after digitalis and other diuretics have failed.

Alkan and Arnheim[6] find theocin a useful diuretic in dropsy. It acts on the kidney, and has no primary action on the heart or pulse tension. Whether it acts in any given case depends on the state of the kidneys. The best results are obtained in chronic interstitial nephritis, where there is always sufficient healthy tissue left to respond to the drug. Theocin should not be continued for more than a day or two at a time. During the interval, calomel, digitalis, or diuretin can be administered. In any case, when the kidney is embarrassed by either local or general obstruction, theocin acts only after the obstruction has been relieved, either by digitalis or scarification. In cases of pressure on the inferior vena cava, theocin has no effect. It is contra-indicated in acute inflammation of the kidney and in diffuse parenchymatous inflammation.

REFERENCES.—[1]*Berl. klin. Woch.* No. 1, 1904; [2]*L'écho Méd. du Nord.* Aug. 23, 1903; *Treatment,* Dec. 1903; [3]*Wien. klin. Woch.* No. 17, 1904; [4]*Cor.-Blatt. f. schweiz. Aerzt.* No. 17, 1904; [5]*Arch. f. Kinderh.* xxxviii, bd. 3; [6]*Ther. Monats.* Jan. 1904; *Brit. Med. Jour.* April 23, 1904.

## THIOCOL.

Polidoro[1] finds thiocol a satisfactory substitute for quinine as a prophylactic in **Malaria.** It has a pleasant taste, is very soluble, and does not irritate when administered hypodermically. He uses two doses of 15 grs. each, which are given four and three hours before the expected paroxysm. In 176 cases these doses proved satisfactory. In only 7 cases had the dose to be doubled. The fever and acute splenic enlargement disappear, and the parasites become immobile, or show

diminished motility with loss of segmentation. For prophylactic use, a daily dose of 15 grs. of thiocol, along with the application of an aromatic solution to the exposed parts of the body to drive away mosquitos is recommended.

Ingals[2] has given thiocol in 22 cases of **Pneumonia.** Commencing with 20 grs. daily, he rapidly increased this up to 120 grs., without doing any harm or upsetting the digestive organs. The drug did not seem to have any influence on the disease.

Mendelsohn[3] recommends thiocol for **Phthisis** and **Scrofula.** It is very useful for children, as the taste is not unpleasant and there is no smell. The appetite is sharpened. It is always well borne, and combines the good effects of creosote and guaiacol without their disadvantages.

REFERENCES.—[1]*Med. Thès.* Feb. 1904; *Merck's Arch.* June, 1904; [2]*Med. News,* p. 727, 1903; *Med. Chron.* Jan. 1904; [3]*Deut. Aerzt. Ztg.* No. 2. 1904.

**THIOSINAMIN.**

This substance is said to have the effect of removing fibrous tissue. Lengemann[1] reports two cases of **Palmar Contraction** which have been cured. In a third case of contracture of a finger, of ten years standing, a course of 40 injections combined with baths, massage, and passive movements, have resulted in great improvement. The injections are made in the fibrous tissue under considerable pressure, and to prevent pain he used a preliminary injection of cocaine.

Hartz[2] has noted an extraordinary action in the case of fibrous **Stricture of the Pylorus,** with secondary dilatation of the stomach and motor insufficiency. He used a 15 per cent solution in alcohol, and injected this into the subcutaneous tissue of the back in doses of ½ to 1 cc. twice weekly. Rapid improvement in the symptoms of obstruction was seen. After nine injections, the fluid used in washing out the stomach returned clear, while after the eleventh injection the symptoms had almost disappeared. The patient was eating well and digesting his food.

Ernst[3] observed a favourable influence on **Lympho-sarcomatous growths.** These had occurred in the neck, and after removal had grown again, and the scars became keloid. Thiosinamin was used in 10 per cent strength, at first in doses of 1 cc. every second day, rising to 2 and finally 3 cc. The injections caused rapid disappearance, not only of the keloid formation, but also of the sarcomatous growth. After twenty-four injections the growths on one side of the neck had entirely disappeared, while elsewhere they had shrunk to three-quarters of their original size.

Baumstarck[4], employing hypodermic injections, saw no good effect in 5 cases of carcinoma of the gastro-intestinal tract. Similarly, in seven cases of benign stricture the results were almost negative.

REFERENCES.—[1]*Deut. Med. Woch.* No. 13, 1904; [2]*Ibid,* Feb. 18, 1904; [3]*Centr. f. Chir.* April 9, 1904; [4]*Berl. klin. Woch.* June 13, 1904.

**THORIUM.**

This substance is found to possess radio-active properties, and the emanations are capable of being turned to therapeutic effect. The exposure to the radio-activity of thorium shows that the emanations have an antiseptic and antifermentative action, which is inimical to germ life. Fermentation and mould growth are checked by the emanations. The best results are obtained with thorium in the gaseous form. A special apparatus for heating thorium oxide or nitrate, and inhaling the vapour, has been made by Lieber[1]. After using these thorium inhalations, there is left in the lung cells a fine film of radio-active matter, which, in turn, produces the phenomenon of induced radio-activity in the same parts. This "induced" radio-activity remains long after the original emanations have been exhaled. It lasts in most cases for from one to two days. Consequently the inhalations should be given every other day for a period of fifteen minutes, gradually rising to thirty minutes. The inhalations are suggested for the treatment of **Tuberculosis.**

REFERENCE.—[1]*Med. Rec.* Jan. 23, 1904.

**THYME.**

Many preparations of thyme are already on the market: pertussin, solvin, and five others contain bromides in addition. Fischer[1] prefers pure, concentrated, alcoholic preparations, *e.g.*, extractum thymi, sero-thymin. Thyme is absolutely free from risk, and can be used in **Whooping Cough,** and generally to loosen mucus and to facilitate expectoration

REFERENCE.—[1]*Deut. Med. Woch.* June 18, 1903.

**TRAGACANTH.**

As a lubricating substance for catheters, bougies, etc., Strauss[1] strongly recommends the following formula: Tragacanth, 1·5; rub up with cold water, 50 parts; add glycerin to 100 parts; and sterilize by boiling. Cool, and add 0·2 parts mercury oxycyanide, or 0·1 part formalin.

REFERENCE.—[1]*Monats. f. Harnkr. u. Sex. Hyg.* Hft. 1, 1904.

**TRIFERRIN.**

Triferrin is used in the form of powder, tablet, or mixture. It is a brownish yellow powder, insoluble in water or weak acid solution, but soluble in alkaline media. It is very unirritating. Kramm[1] found that even in gastric conditions no discomfort was caused. The complaints made were trifling. He used it in thirty cases. The drug does not affect the appetite, and causes no constipation. Under its action the hæmoglobin rapidly rises.

REFERENCE.—[1]*Ther. Monats.* Oct. 1903.

**TRUNECEK'S SERUM.**

This serum is of the following composition :—

| | | | |
|---|---|---|---|
| ℞ Sodium sulphate | 0·44 grams | Sodium carbonate | 0·21 grams |
| ,, chloride | 4·92 ,, | Potassium sulphate | 0·40 ,, |
| ,, phosphate | 0·15 ,, | Distilled water | to 100 cc. |

This corresponds to the blood serum as given by Hoppe-Seyler, except for the greater concentration of the inorganic salts. Another slightly modified formula is :—

| | | | |
|---|---|---|---|
| ℞ Sodium chloride | 10 grams | Sodium phosphate | 0·30 grams |
| ,, sulphate | 1 ,, | Calcium and Magnesium | |
| ,, carbonate | 0·40 ,, | phosphate | ää 0·75 grams |

Div. in cachet. xiii.

Each cachet equals 15 cc. of serum or 150 cc. of blood serum.

These salts keep the blood normal in reaction. The serum dissolves calcium phosphate, which is the main deposit in **Arterio-sclerosis.** It has been employed either hypodermically or intravenously in general circulatory disturbance.

Chandler[1] has had good results from the serum given by the mouth in **Arterio-sclerosis, Asthma** from arterial changes, **Rheumatism, Cerebral Circulatory disturbance, Anæmia, Ringing in the Ears,** and **Senile Fibrosis.** In four-drachm doses night and morning the serum gave fine results in rheumatism and arterio-sclerosis and was particularly useful in softening rigid, tense arteries before operations. The general proportion of favourable results was high ; but there were failures, where the serum gave absolutely no result. Chandler claims that the oral administration of the serum is the easiest and best method in which the serum can be used.

An obstinate case of **Pruritus**[2], which resisted all treatment, both local and general, rapidly yielded to injections of the serum.

References.—[1]*New York Med. Jour.* Feb. 13, 1904 ; [2]*Trib. Méd.* June 11, 1904.

**URANIUM.**

Tylecote[1] has re-investigated the pharmacological action of uranium compounds. He inoculated sterile threads with the staphylococcus pyogenes aureus, and exposed them to the action of solutions of uranium salts. Cultural experiments showed that the effect of the uranium solutions was but slight, and as strong solutions were costly, uranium is not suitable for clinical use as an antiseptic. Small quantities of a 1 per cent solution of uranium nitrate have a marked effect in checking the digestion of pepsin, amylopsin, and trypsin, while even the presence of a trace was sufficient to inhibit salivary digestion completely. The action of the oxychloride was similar, but not quite so marked.

A solution of the uranium salt of the strength of 1–500 and upwards leads to the precipitation of all the blood proteids from a mixture of fresh defibrinated blood diluted with Ringer's solution. The

spectroscopic picture does not change. There is no formation of methæmoglobin or reduction. The presence of uranium delays the clotting of blood. The effect of the nitrate is much more marked than of the oxychloride.

On frog muscle the effect of uranium salts is in many respects comparable to that of barium and veratrine; the duration of the latent period is unaltered unless a strength of 1–500 is used, when it is increased. The height and rapidity of contraction keep as good as with normal saline preparations. Uranium does not diminish the amount of work that can be obtained from a muscle, as it lives as long in a uranium solution of 1–500 as in a normal saline solution. It does not seem to have any effect on the motor-nervous mechanism of the muscle. On the vessels, solutions of greater strength than 1–10,000 cause vascular contraction, the oxychloride being slightly more powerful than the nitrate. The rate of cardiac contraction is not materially altered, but the size of the individual heart-beat is lessened by solutions of 1 in 10,000 and upwards. A strength of 1–3000 usually suffices to cause arrest in diastole. This action is due to the direct effect on the muscle tissue, and is not due to any action on the vagus.

Therapeutically, he finds uranium nitrate 2 grs. to the oz. of water, useful as an astringent wash for **Indolent Ulcers**. It is also a mild hæmostatic. An injection of 5 grs. to the ounce is useful in **Gonorrhœa** owing to its astringent properties. Internally uranium must be used with caution, starting with 1-gr. doses thrice daily. It should be well diluted and given immediately after meals. The drug should be stopped for a time if albuminuria develops, or if the albumin previously present is increased. If used with care, no complaint of digestive disturbance is made, and up to 5 grs. t.i.d. may be used. Tylecote tested the drug in three cases of **Diabetes**. In every case it caused at the outset an increase in weight, which continued if the dose was not pushed too far, and was accompanied by a feeling of improvement in the conditions and spirits of the patients. In no case was the output of sugar appreciably diminished, but occasionally the polyuria was lessened. That the dose has been pushed too far is shown: (1) By the weight no longer increasing, but commencing to fall; (2) By increased complaint of neuralgic pains; (3) Increased output of sugar; (4) Occurrence or increase of pre-existing albuminuria.

A similar gain in weight under uranium occurred in three cases of **Phthisis**, so that it might be of use to test the drug in cases of general wasting.

REFERENCE.—[1] *Med. Chron.* Sept. 1904.

## VALERIAN.

Kochmann[1] finds that the valerian preparations are very unstable. The active principle is the oleum valerianæ. The fresh oil is yellowish-brown and only slightly acid. Old oil is dark brown and very acid.

from decomposition into bornyl and volatile acid. Kochmann has tested various preparations, and finds that in all of them this acid decomposition takes place. The tinctures were particularly unstable, and the oil and infusions were also unreliable. The most stable preparation was **Valyl**, which remains neutral when exposed to the air.

VALIDOL.—Kœpke[2] finds this drug very useful in sea-sickness. He employs it as follows. In the early stages 10 to 15 drops are given on loaf sugar, and the patient is told to lie down for half an hour. He may then take a glass of wine and a biscuit. This treatment for slight cases is almost always sufficient. In severe cases, where the sickness has persisted for days, the patient is immediately ordered to bed, and the drug is given on sugar. Half an hour later teaspoonfuls of a mixture of sherry, two yolks of eggs, and ice are given, and this is repeated several times.

REFERENCES.—[1]*Deut. Med. Woch.* Jan. 1904; *Brit. Med. Jour.* Feb. 20, 1904; [2]*Ther. Monats.* No. 6, 1904.

**VASELIN.**

Büdinger[1] has used injections of sterile white or yellow vaselin for **Arthritis**. For some days after the injection there is considerable pain, but then, in the majority of cases, great improvement as regards pain and function. Subsequent operations have shown that the vaselin to a large extent remains in the synovial fluid. Its action is probably that of a lubricant protecting the roughnesses of the joint surfaces. For the knee-joint about 4 cc., for the shoulder 3 cc., and for the smaller joints 1 to 2 cc. are used.

REFERENCE.—[1]*Wien. klin. Woch.* No. 17, 1904.

**VERONAL.**

Fischer and v. Mering[1] consider this preparation to be an improvement on sulphonal and trional, owing to its greater solubility in water, wherefore it is more rapidly absorbed and acts more quickly. The best vehicle is tea, which most effectually conceals the bitter taste. The ordinary dose, 0·5 gram, rapidly dissolves in a cup of warm tea. Milk is not a good solvent. A capital form of administration is in tablet form made up with 10 per cent of starch. After administration in capsule, sleep frequently comes on very slowly, and often only after several hours have elapsed.

The same authors[2] state that veronal is excreted unchanged in the urine. The excretion lasts several days. The drug can be recovered by evaporating the urine under pressure to one-fifth of its original volume, and then extracting with ether. The ether is driven off by heat, and the residue, after passing through animal charcoal to decolorize, crystallizes out the veronal.

Weber[3] tested the drug in the psychiatrical clinic in Göttingen. He finds that the cases which react best to it were those in which there was sleeplessness owing to over-exertion or slight apprehensive

excitability. It does not act so well in the sleeplessness of recent exhaustion psychoses, and of mild maniacal excitement. As a sedative, veronal combats excited states, *e.g.*, hallucinations. In epileptic mania it acted promptly and well. The drug seemed to have a less powerful action after using it for four or five days. Montagnini[4] has used it in nervous conditions, notably dementia agitata. He noted no cumulative action or loss of effect even after repeated administration. In some cases flushing, sweating, oliguria, nausea, and vomiting occur, but never to a serious extent.

Jordan[5] states that sometimes after a dose of veronal the patient does not fall asleep for three or four hours. Davids[6] has been favourably impressed with veronal. He recommends small doses of 4 to 7 grs. He notes as very useful its sedative effect on patients after ophthalmic operations.

Jolowicz[7] has used veronal in about 50 cases, and has had uniformly good results wherever general nervous causes have produced sleeplessness. It acts even in the face of slight coughing and slight pain, but is useless in severe pain or dyspnœa, unless combined with small doses of morphine. Thus combined with $\frac{1}{20}$ gr. of morphine, it has both an anodyne and hypnotic action.

Senator[8] reports a case of cardiac disturbance following the use of veronal. Two doses of 15 grs. caused precordial pain, rapid pulse, and arrhythmia.

Clarke[9] has had a case of poisoning in a young married lady of nineteen. When called to the case he found the patient in a deep sleep, breathing regularly but somewhat stertorously, pulse slow but regular, pupils reacting to light. The temperature was normal. Without any treatment the patient regained consciousness in twelve hours. After three days an erythematous rash developed, with considerable irritation and swelling of the face. This passed off in three days. The patient surreptitiously recommenced the drug, and became again drowsy, while there was slight fever and a pulse of 125. Constipation was very obstinate, and resisted enemata and castor oil. The patient again developed a scarlatiniform rash, and had periods of delirium alternating with periods of semi-coma. For four days the patient succeeded in concealing the supply of veronal, and in that time took 128 grains. On cutting off the supply a rapid cure was effected, all the symptoms disappearing except a slight roughness of the skin.

References.—[1]*Ther. d. Gegenw.* April, 1904; [2]*Ibid*, No. 6, 1904; [3]*Deut. Med. Woch.* Oct. 1, 1903; *Brit. Med. Jour.* Jan. 8, 1904; [4]*Gaz. deg. Osped.* Nov. 29, 1903; *Brit. Med. Jour.* May 12, 1904; [5]*Brit. Med. Jour.* March 5, 1904; [6]*Berlin. klin. Woch.* No. 31, 1904; [7]*Deut. Med. Woch.* No. 22, 1904; [8]*Ibid*, No. 31, 1904; [9]*Lancet*, Jan. 23, 1904.

**VIOFORM.**

This drug[1], an iodchloroxychinolin, has been recommended as a substitute for **Iodoform.** Its antiseptic action is stronger, and it does not irritate the skin. Itself odourless, it is a strong deodorant. It

is stable and non-volatile. It does not produce toxic symptoms even when used in large quantities. It is not suited for injecting purposes. The best way to use it is as a powder, or in impregnated gauze, or as a 10 per cent ointment.

REFERENCE.—[1]*Cor.-Blatt. f. schweiz. Aertze,* Oct. 15, 1903; *Med. Chron.* Oct. 1903.

**VISCINUM.**

*Viscinum purificatum* is bird-lime from mistletoe, purified so that the odour and staining properties are removed. It is a substitute for rubber. It is very sticky, and can be used in **Plasters**, or as a **Paint** containing the drug required. Viscinum is colourless and transparent, and does not irritate the parts to which it is applied. It is almost as dear as rubber, but Vœrner[1] believes that it will prove a distinct acquisition to the therapeutical armament of the dermatologist.

REFERENCE.—[1]*Deut. Med. Woch.* Oct. 8, 1903.

**YEAST.**

Presta and Tarruela[1] have used dried yeast, in doses of from 4 to 6 teaspoonfuls daily, in cases of **Measles** and **Scarlet Fever.** They find that on the whole the course of the illness is shortened, since, though the actual fever is not affected, sequelæ are avoided. Similarly, in erysipelas the internal administration of yeast, without any local treatment, lowers the fever

Audibert[2] states that the local application of beer yeast has an almost specific action in curing the troublesome leucorrhœa which occurs in pregnant women. Out of a series of 29 cases of varied origin, he has obtained cures in 26, while 3, which did not remain long under treatment, were improved. His procedure is as follows: The vagina is slowly washed out with about two quarts of warm water, care being taken to unfold all the rugæ with the fingers. A solution of yeast, 2 tablespoonfuls to the quart, is then injected, and finally a tampon soaked in a syrupy mixture of yeast and sterile water is applied to the cervix. The cure is obtained in most of the cases in from two to four weeks.

He uses the same procedure to sterilize the vagina as a preliminary measure to operation, when the vagina contains purulent material.

REFERENCES.—[1]*Rev. Français de Méd. et de Chir.* Aug. 1, 1904; [2]*Presse Méd.* July 30, 1904.

**YOHIMBIN.**

Clairborne and Coburn[1] investigated the anæsthetic action of this drug in diseases of the eye, throat, nose, and ear. Their results were as follows. A 2 per cent solution, either with or without the addition of adrenalin, dropped into the conjunctival *cul-de-sac*, produces both conjunctival and corneal anæsthesia. The anæsthesia of the cornea is more marked, and lasts from 30 to 45 minutes. The conjunctival anæsthesia is never so profound, and disappears several minutes earlier.

The first instillation causes a slight stinging sensation, but this passes off with subsequent instillations. The eye becomes immediately suffused, and continues red for more than an hour. The palpebral fissure is not widened. The pupil is moderately dilated, lasting from 15 to 20 minutes. With yohimbin-adrenalin it comes on quicker than with yohimbin alone. The vision is slightly blurred, due less to muscular paresis than to spherical aberration. It is only a mild mydriatic. When mixed with yohimbin, adrenalin has no constringing effect on the blood-vessels of the conjunctiva. Owing to its congestive properties, yohimbin is not a suitable anæsthetic for eye work.

For **Throat** and **Nose** work it possesses the advantages of being non-toxic, producing a prolonged anæsthesia, while it does not produce unpleasant constriction of the mouth and throat. On the other hand, as it does not constrict the vessels, it is apt to lead to hæmorrhage and salivation. The solution does not keep well.

REFERENCE.—[1] *Med. News*; *Merck's Arch.* Aug. 1904.

## SERUM THERAPEUTICS AND ORGANO-THERAPY.

### IMMUNITY.

Neufeld[1] has discovered a rapid method of immunizing rabbits against **Streptococcic Infection.** He gives a single injection of a culture killed by heat; this is followed by an injection of living organisms. In both cases the organisms alone are injected, and are kept separate from their toxic products. The immunity obtained is only against the living cultures, but there is no immunity against the toxic products. Using this method, rabbits are easily immunized against large doses of virulent streptococci. The immunity obtained is valid against not only the particular strain employed, but also against all other varieties of streptococci. The serum of immunized animals is very rich in immunizing and agglutinating substances. Avirulent streptococci are agglutinated far more readily than virulent forms. He further states that there is no proof that the streptococci found in scarlatina are essentially different from other strains.

Bordet[2] has investigated the mode of action of antitoxin and toxin. In his experiments he used sera containing anti-alexin and alexin. These sera were mixed in various proportions, and as an indicator of the action, red blood-corpuscles mixed with an alexin-free serum was employed. By this means he was able to show that the effect of the anti-alexin was distributed throughout the whole mixture, so that it does not simply neutralize its equivalent portion of alexin and leave the surplus unaffected. In every mixture of alexin and anti-alexin a new body is formed, a complex of two antagonistic substances whose composition depends on the proportion of the two elements. There is no fixed relation of combination, and the proportions are variable. This explains how a mixture of toxin and antitoxin

which is inoffensive for one species, may yet prove deadly for animals of another species. The action of the antitoxin is to attenuate the effect of the toxin. According to the view of variable combination, any mixture of toxin and antitoxin no longer contains any toxin in its primitive form, but in a complex attenuated form. This form is really a new body, having characteristic properties of its own. Thus, for one species it may quite well be innocuous, while for a more susceptible species it still retains a toxic action. In fact, a mixture in which the toxin is completely saturated with antitoxin may still be fatal to some species, if it is particularly susceptible to the new substances formed from the mixture.

Turro[3] has made some interesting experiments which show that the bacteriolytic power of rabbits can be stimulated by various substances. Thus by dissolving **Yolk of Egg** in its own white, a solution is obtained which in the course of three or four weeks acquired enormous bacteriolytic power, so that it can destroy a culture of anthrax bacillus equal to one-quarter of its own weight. When 5 grams of this serum for each kilo body-weight is injected subcutaneously into a rabbit, the resisting power of the rabbit is increased. Thus, if two days after the injection, anthrax bacilli be inoculated, the death of the animal is delayed for 9 to 17 days longer than the controls. As this protective action takes some time to develop, it is probably due to a physiological synthesis formed with the normal alexins, whereby the foreign alexins in the ovi-serum are added on.

A 1 per cent emulsion of **Splenic Pulp** in physiological saline solution produces similar effects in rabbits. The action of saline solution alone is interesting. Doses of 50 grams per kilo of body-weight, followed twenty-four hours afterwards by a dose of virulent anthrax virus, retards death for from ten to fourteen hours. Doses of 100 grams per kilo are said to protect the rabbit entirely against this infection. The action is fugitive, and lasts only from one to three days.

Capaldi[4] finds that granulation tissue is impervious to bacteria, yet certain substances are able to pass. The agglutinating power of the blood against pyocyaneus increases if the granulation tissue of a burn be smeared with pyocyaneus culture, though no bacilli could ever be demonstrated in the blood. Thus from being non-agglutinating, the blood subsequently agglutinates in dilution of 1–50 to 1–400. Probably the anti-bodies formed in the destruction of the bacilli are set free and absorbed.

Certain bacteria do not produce extra-cellular toxin passing into the culture-fluid, but seem to be toxic only in respect of substances which are formed inside the bacteria. Macfadyen and Rowland[5] have elaborated a method for obtaining the intracellular toxins of the typhoid bacillus by triturating the organisms when in a frozen condition at the temperature of liquid air. The resulting mass, mixed with salt solution and centrifuged, gave a very toxic fluid. Injections

into monkeys gave rise to the development of antitoxic and antibacterial bodies in the blood, and the serum became curative and preventive in its action.

Rodet, Lagriffont, and Wahby[6] deny that the toxic products of the typhoid bacillus are entirely intracellular. They found that filtered cultures still retain a certain toxicity. They are at least as toxic as the bacillary bodies. The degree of toxicity depends on the age of the culture. Young cultures are most toxic, but their toxicity is fugaceous and rapidly disappears. The substance which gives this toxicity to the filtered culture is not a product of the disintegration of dead bacilli, but is a toxic secretion of the living germ. In every case, however, a notable quantity of this toxic substance remains incorporated with, or adherent to, the body of the bacillus. After its secretion this toxic substance rapidly alters in the culture.

*Nucleic Acid.*—Miyake[7] has undertaken a series of experiments to ascertain whether it is possible to increase the resisting power of the organism against the ordinary bacteria which induce **Peritonitis.** He hoped that, by administering a drug which induces hyperleucocytosis, it would be possible to increase the resisting power of the organism. He examined the action of several substances, and found that intraperitoneal or subcutaneous injection of a neutralized ½ per cent solution of **Nucleic Acid** was the most satisfactory. After the injection into the subcutaneous tissue of 1 cc. of this solution, there is at first a slight negative hypoleucocytic phase, followed in two or three hours by a marked increase in the number of leucocytes in the blood and in the peritoneal exudation. If 1 cc. of the 0·5 nucleic acid solution was injected into the peritoneum of a guinea-pig, it caused pain and slight lowering of temperature. Seven hours afterwards the peritoneum was inoculated with a virulent culture of bacillus coli. The effect of the nucleic acid was so marked that the animal was able to resist twenty times the normal minimum lethal dose of the bacillus coli. Similarly a subcutaneous injection of 1 cc. of a neutralized 0·5 per cent solution of nucleic acid was tried. It causes almost no inconvenience, and protects against twenty times the normal lethal dose given seven hours after the injection. A solution of 0·25 per cent has no protective action. By repeated injection of 1 cc. of 0·5 per cent solution for three or four days, a greater degree of protection was obtained, so that the animal was now able to withstand thirty-two times the normal lethal dose. Against a mixed infection with bacillus coli, staphylococci, and streptococci, a preventive injection seven hours beforehand protected against sixteen times the lethal dose. It would therefore seem a good plan to inject subcutaneously a neutralized solution of nucleic acid in threatening cases of peritonitis. Even after the peritonitis has commenced, nucleic acid seems to have considerable curative action.

The phagocytic power was tested in normal animals. An injection

of nucleic acid is made into the peritoneum, and seven hours afterwards a virulent culture of bacillus coli is injected. By cultural investigation it could be shown that by the end of the forty-eight hours the peritoneum was sterile. The phagocytic power had been sufficient to destroy all the bacteria introduced. In Mikulicz's clinic, in 106 cases 1 gram of nucleic acid in the form of a 2 per cent solution has been injected into the subcutaneous tissue of the breast before operations, when there is a probability of infection. The general impression is that these injections are useful.

*Horse Serum.*—Petit[8] has noted that, of the substances which cause a local afflux of leucocytes on being introduced into the peritoneal cavity, one of the most powerful is heated horse serum. The serum is heated for two hours to 55° C. It causes on intraperitoneal injection an enormous production of polymorphonuclear leucocytes which are actively phagocytic. Frequently there is a slight rise of temperature which is transient. He states that by means of such injection he has been able to protect animals against five to eight times the toxic dose of bacillus coli and streptococci. He uses the same procedure with success in cases of **Suppurative Abdominal lesions.** He relates especially[9] the case of a woman suffering from albuminuria, who after confinement developed a large intrapelvic phlegmon. Despite vaginal and iliac incision her condition did not improve: the temperature remained high, and there was no discharge. On pouring into the abdominal incision 20 cc. of the heated serum, the temperature fell in a few hours, and there was a copious discharge containing a large number of polymorphonuclear leucocytes showing active phagocytosis. A few days afterwards the temperature rose again, but a second infusion of the serum was equally successful, and the infiltration rapidly resolved.

### Organo-Therapy.

*Diarrhœa.*—Glässner and Sigel[10] found **Pancreatin** and sodium bicarbonate to have a good influence on the absorption of fat and albumin in a patient who for two years had suffered from diarrhœa. The stools were colourless, and contained large quantities of fat.

*Dropsy, Renal and Cardiac.*—The macerated **Extract of the Pig's Kidney** is recommended by Prof. Renaut[11] in the treatment of renal and cardiac dropsy. It is a very active diuretic, acting rapidly and surely, while its diuretic action is intense. It tends to restore the kidneys to a healthy action, and reduces the albuminuria. The maceration is prepared as follows: "Take one, more frequently two, absolutely fresh pork kidneys, chop them up fine, and then wash them thoroughly in water so as to remove any stagnant urine they might contain. The chopped meat is then pounded up in a mortar with about 12 ounces of salt water (half a teaspoonful of salt), and the whole left to macerate for four hours, and then decanted. The patient

will take it in three or four doses in the day. In order to make it more palatable, or rather less repugnant to the patient, I generally have added to it a little warm soup (soup julienne)." The administration of the macerated kidney should not exceed ten consecutive days, after which a rest of five days should be ordered, and the treatment be recommenced. It is needless to add that fresh kidneys should be procured every day.

*Gynæcological Hæmorrhages.*—Landau[12] finds that on expression of the spleen of the horse a substance is obtained to which he has given the name of **Stagnin.** The extract is an albuminous substance, containing an extraordinarily large amount of iron. After showing that it had no noxious action on animals, Landau administered it hypodermically to anæmic individuals, with very satisfactory results. Among the patients was one suffering from profuse menorrhagia, which had resisted all treatment, both local and constitutional. Within forty-eight hours of the first injection the menorrhagia ceased. Landau has since collected 59 cases of metrorrhagia and menorrhagia of different origin, which have yielded to injections of stagnin. The action does not seem to be one on the vessel wall, since the blood-pressure is not raised; it seems rather to increase the coagulating properties of the blood. It acts chiefly on capillary hæmorrhage, but has no action when applied locally. While strongly recommending the new preparation as a remedy for gynæcological hæmorrhages, the author suggests that it may also prove useful in internal hæmorrhage of other origin, as hæmoptysis, bleeding from the bowel and stomach.

Hirsh[13] describes the preparation of stagnin. The spleen is removed immediately after death, and kept on ice for not longer than one to one and a half hours. Then, under antiseptic precautions, the pulp is removed and rubbed up with double its volume of 0·91 per cent salt solution, made alkaline with soda solution. To prevent putrefaction enough chloroform was added, so that some of it remained undissolved. After standing for forty-eight hours the mixture was filtered. This solution was then evaporated to one-quarter its volume, and precipitated with alcohol, which precipitate, dried with alcohol, forms stagnin.

*Hepatic Cirrhosis.*—Crégny[14] in hepatic cirrhosis gave 1 gram of **Liver Extract** (prepared by Gilbert's plan of extracting with water at 35°). The extract was given in milk, in addition to ordinary diet and 7·5 grs. of pot. nit. The chief effects observed were cessation of the hæmorrhages and disappearance of hæmorrhoids. Œdema and ascites passed off.

Hirtz observed a good action in one case of hepatic cirrhosis, in which the organ apparently became almost normal again. In two other instances he saw no greater benefit than with the ordinary methods of treatment. Hirtz reported a second case subsequently, where a man suffering from alcoholic cirrhosis of the liver was cured

by the administration of 100 grams daily of **Fresh Pig Liver** along with milk diet. The urine rose and the œdema completely disappeared. Previously, under milk diet and calomel, no improvement had been seen.

*Puerperal Eclampsia.*—Baldowsky[15] has used **Thyroid Extract,** or **Thyreoidin,** with good results in two cases of eclampsia.

Sturmer[16] has a favourable report of 41 cases of puerperal convulsions treated with thyroid extract. The cases are not very conclusive, since all but one received morphia, and several also received saline injections. Sturmer considers that the beneficial effect of the thyroid extract is due to the diuresis which is induced.

Valerio[17] puts on record a case of general increase of nervous reflexes in a pregnant woman, which was cured by subcutaneous injections of thyroid extract.

## Serum Therapeutics.

*Cholera.*—Murata[18], during an epidemic in Japan, employed preventive inoculation with dead cholera bacilli. The bacilli were grown on gelose for twenty-four hours. Then the culture was diluted with water till 1 cc. of the resulting emulsion was equal to one platinum loopful of the culture. The emulsion was then heated to 60° for half an hour, and the dose was 1 cc. Among the inoculated the mortality was only 45·5 per cent, as against 75 per cent in the uninoculated. Further, the attack-rate was much lower in those inoculated: 6 per 10,000 in those inoculated, as against 13 per 10,000 in those not inoculated. There was never a dangerous reaction noted after the inoculation, though there was often slight elevation of temperature, and pain and swelling at the site of injection.

Strong[19] has produced a cholera vaccine by the autolytic digestion of cholera spirilla in aqueous solution. On injection into rabbits the vaccine causes the appearance of bactericidal and agglutinative substances in the blood, equalling or exceeding those developed on inoculating with living virulent vibrios. The vaccine is unirritating, and may be evaporated to a powder, which, when re-dissolved in water and injected, produces immunity.

*Diphtheria.*—Cruveilhier[20] has made observation on guinea-pigs regarding dosage, method of administration, and frequency of repetition. In two series of experiments, one on animals inoculated with the toxin, and in the second case with living culture *plus* toxin, he found that the most efficient method of employing the serum was by direct intravenous injection. His conclusions are that a primary massive dose should be employed, and in severe cases repeated. Intravenous administration should be the method of choice, as by it the curative action is still possible some hours after other methods of administration (subcutaneous, intracerebral) fail to save life.

Jarnowski[21] has noted a favourable action of the antitoxin on ozæna.

*Dysentery.*—Considerable attention has been paid to the question of the production of an efficient dysentery antitoxin. Dysentery seems a disease which lends itself to the action of an antitoxin, in that, like diphtheria, it is essentially a local infection, with general symptoms due to the absorption of soluble toxins. The bacilli are found in the intestine and mesenteric glands, but do not appear in the spleen or other organs.

Both Todd[22] and Rosenthal[23] have succeeded in producing a soluble toxin by growing the bacilli in alkaline media. The culture medium must be kept fairly alkaline, since, if the reaction is neutral or acid, the toxin formed is weak. The toxin is only slowly developed, but when obtained is fairly stable. Rosenthal found that it is not destroyed by heating to 70° to 100°; while Todd states that his toxin resisted a temperature of 70° for an hour, but was destroyed by an hour at 80°. Injected into animals the toxin causes paralysis of the hind limbs, diarrhœa, and weakness. With this toxin both authors have immunized horses, and have obtained in this way active antitoxic sera. The antitoxic serum protects rabbits against fatal doses of the toxin. It has also a marked prophylactic action. Given intravenously, Todd found that it protects absolutely against large doses of the toxin given half an hour later. This effect does not, however, last long, since if the serum be given twenty-four hours beforehand, the protection afforded is only slight. Mixtures of the toxin and antitoxin show, that for neutralization to take place a certain time is required, the rate of combination varying with the temperature. The antitoxin is purely antidotal to the toxin. It has no more protective action against injections either of the living or dead bacilli, than normal serum. This seems to indicate that the toxin produced in the culture fluids is really an extra-bacillary secretion, and not simply a solution of intra-bacillary toxin.

Rosenthal[24] prepared a serum by immunizing horses with cultures of the Shiga-Kruse bacillus. He has used the serum in 157 cases of dysentery, and finds that it has a marked action on the tenesmus and pain. The diarrhœa is lessened, blood disappears from the stools, and the course of the disease is shortened. The death-rate is reduced by one-half, and it is very seldom that cases become chronic. If the serum is administered in the first three days of the illness, cure is rapid, and occurs in one or two days.

*Goitre, Exophthalmic.*—Many attempts have been made to combat exophthalmic goitre by injecting the serum of animals from which the thyroid gland has been removed. Such serum is said to contain excess of substances normally destroyed by the thyroid secretion. Consequently in hyper-secretion of the thyroid gland, injection of this serum may serve to neutralize the effect of excessive thyroid action.

Lépine[25] has proceeded on a different plan. He thinks that the

true anti-thyroid secretion is produced by immunizing normal animals against injections of thyroid matter. He has thus produced in the goat a serum which has no ill-effect on dogs if injected in doses of less than 20 cc. and if several days are allowed to elapse before repeating the dose. He thinks this serum may be of some use in exophthalmic goitre.

*Hay Fever.*—Somers[26] publishes a series of ten cases treated with Dunbar's serum. The serum was used in the form of powder or fluid. One or two drops of the serum were placed in each eye and in the nose, whenever an attack of hay fever was expected, or when there is any irritation. The dried serum can only be used for the nose. It should be mixed with an inert powder, *e.g.*, sugar of milk. The results in the ten cases were excellent—prompt amelioration of symptoms in the majority of cases, while in a few the affection entirely disappeared. When used either as a prophylactic before an attack, or as a palliative during one, the serum acts not as an absolute cure, but rather as a palliative measure.

Glegg[27] uses data given by Dunbar to review the results obtained by the serum treatment of hay fever in 1903. The serum is obtained from horses, and to ensure a definite antitoxic action it is standardized by actual experiment on hay-fever patients. The minimal amount of a solution of pollen toxin which just causes a reaction when applied to the conjunctiva of a susceptible person is fixed. Then this amount of toxin is mixed with antitoxin in diminishing amounts, till it is found what quantity just neutralizes the toxin. The serum is put upon the market in two forms, a fluid preserved with ¼ per cent carbolic acid, and a dried powder mixed with sugar of milk. The serum preserves its action for months without much loss of effect, but it is readily contaminated by growths. The fluid serum is called **Pollantin.** It is used by applying a drop to the outer margin of the eye while the lower eyelid is pulled down by the finger. For the nose, the best form is the dried powder, as it is more easily managed and is less irritating. The dry preparation can also be used for the eye, applying it with a camel-hair brush, but for a few seconds it acts as a foreign body and causes some inconvenience. In some instances relief is obtained by the powder when the fluid fails to act. The best way to use pollantin is as a prophylactic. It should be applied both to the nose and eyes every morning, a few minutes before rising. Should any irritation come on during the day, the application should be repeated. During the night the patient should sleep with windows and door closed, and in the daytime he should be as little out-of-doors as possible. During a severe attack the serum has but little chance, as it is immediately swept away by the tears. The subcutaneous use of the serum is not advisable, as it is apt to cause local irritation and erythematous or urticarial rashes. The local use of serum causes no ill-effects, and does not lead to the formation of a habit.

As regards the effects produced, in 1903 reports were obtained from 222 patients in all parts of the world.

| | Positive Results. | Partial Results. | No Improvement. |
|---|---|---|---|
| Hay Fever - - - | 127 | 71 | 24 |
| Cases complicated with asthma | 14 | 6 | 9 |
| Percentage results - - | 57 | 32 | 11 |

These results are highly satisfactory and encouraging. In 171 of the cases it was found possible to keep free of attacks by using the serum. In America the serum was used, or a special form made with Solidago toxin. In all 63 cases of autumn catarrh were treated.

| | Positive Results. | Partial Results. | Negative. |
|---|---|---|---|
| Hay Fever - - - | 44 | 12 | 7 |
| Cases complicated with asthma | 8 | 2 | 3 |
| Percentage results - - | 70 | 19 | 11 |

*Hypopyon Keratitis.*—Calderaro[28], founding upon the fact that in the pus of hypopyon the diplococcus of Fränkel is constantly present, with or without other pyogenic organisms, proposes to use Tizzoni's anti-pneumococcic serum. He injects the half of a Pravaz syringe into the subconjunctival tissue every second day or so, according to the degree of chemosis. The injection is not specially painful, and gives rise to no adhesions. Further, the serum is instilled into the conjunctival sac every two hours. In very severe forms an injection may be made into the lumbar region of 5 to 10 cc. The effects are very good in early cases. In advanced cases the injection must be made every day, and may be combined with the use of the galvano-caustic and paracentesis.

*Pneumonia.*—Guthrie[29] reports a severe case of croupous pneumonia, in which he considers the injection of 6 cc. of **Anti-pneumonic Serum** saved the life of the patient. The effect of the serum showed itself chiefly on the pulse, which at once improved in tone. Probably the serum antagonized a sufficient quantity of the toxin, and so allowed the failing heart to regain its tone.

*Puerperal Fever.*—Peham[30] has employed since the beginning of 1903 a serum prepared by Paltauf. It is a polyvalent serum obtained by injecting horses with living cultures of streptococci obtained from different diseases—erysipelas, sepsis, puerperal fever, peritonitis, etc. No attempt is made to increase the virulence of the cultures by animal passage. In all, 44 cases were treated by Peham, with on the whole distinctly satisfactory results, since only 13 cases died. The injections were made into the subcutaneous tissue of the inner aspect of the thighs. Massive doses of serum were employed, 50 cc. into each thigh, so that in all cases 100 cc. were given at one time. The treatment was not confined to the injection of serum, but was always combined with local treatment of ulcers, intra-uterine douching, etc., but curetting was not used. The serum had never any bad effect, even in cases

where there was no streptococcic infection. The therapeutic action was of course most marked in cases of pure streptococcic infection. In several instances of mixed infection no result was produced by the serum. In some cases the beneficial action was shown by the sudden fall of the temperature, with a subsequent slight rise or two, usually associated with the outbreak of an erythema. In other cases there is a slow fall of temperature and pulse, with a marked improvement in the general condition. A very instructive case was that of a woman whose temperature fell rapidly after the injection of serum, but where the typical clinical picture of pyæmia continued with multiple metastatic abscess formation, though the temperature never rose again. The general opinion is that the serum acts as a bactericide, checking the growth of the streptococci, but that it does not actually possess any antitoxic action. Of the 13 fatal cases, 3 deaths resulted from non-puerperal causes. One was due to embolism of the pulmonary artery from a renal pyelitis; the second was one of advanced miliary tuberculosis; while the other was that of a woman suffering from tubercular disease of the lung, with cavity formation and breaking-down of tissue. In none of these cases had the serum any action, good or bad. Two cases of peritonitis due to infection with bacillus coli also succumbed. The other fatal cases were mixed infections with diplococci and streptococci (4 cases), and 2 cases of unknown infection. Bacteriologically the 44 cases could be arranged as follows: (1) 19 cases of pure streptococcic infection; (2) 14 cases of mixed infection, *i.e.*, where bacteriological examination showed that in addition to streptococci other organisms were also present; (3) 2 cases which were not examined bacteriologically; (4) 3 cases where the examination proved negative; (5) A further group of 3 cases in which the examination was indefinite or inconclusive; (6) Lastly, 3 cases which were not of puerperal disease.

The results were most favourable in the first group, of which only one case died. In all the others, with one exception, a distinctly beneficial action was manifested. Several of them showed the presence of streptococci in the blood. Four cases of this nature recovered. Several of the other cases were also very severe infections. In the second group of mixed infections the results were not so favourable, since 6 of the 14 died. Still, in the cases which recovered, the serum seemed to have a slightly favourable effect. In the fourth group the serum had absolutely no action. Even in the cases where the infective agent was either not the streptococcus, or, if present, only of secondary importance, the serum did no harm. Occasionally an erythema developed, but there was never abscess formation. Only in one case was there swelling of the joints. The author comes to the following conclusions:—

1. Even in puerperal infection of the gravest nature due to streptococcic infection, Paltauf's serum seems to have a beneficial action.

2. Experience shows that the good effect depends on the earliest possible administration of large doses.

3. When the illness is of long standing or combined with severe organic lesions, the serum seems to have no action. It appears also not always to prevent the further development of localized metastatic abscesses.

4. A deleterious action even in cases not due to streptococci was not observed.

Bumm[31] reported to the Berlin Medical Society his experiences with the serum treatment of puerperal fever. He has used all the different forms of serum, but chiefly Aronson's. For purposes of classification he divided his cases according to the anatomical localization of the infection. In 5 cases of puerperal septic peritonitis the serum had no effect. Similarly for 4 cases of peritonitis resulting from severe operative measures. Of 3 cases of pure septicæmia, in 2 the serum had no action; in the third the temperature fell promptly, and the patient recovered with the formation of a thrombo-phlebitis. In 3 cases of septic endocarditis there was no effect; in one, indeed, the intravenous injection of the serum seemed to have a bad effect. In 4 cases of pyæmia the serum was useless, while the intravenous injection was actually harmful. The chief group was formed of 53 cases, more or less severe, of streptococcic infection of the endometrium. In these localized infections the serum acted well in 21 cases. The effect was shown on the temperature and in the condition of the lochia. Whereas the septic lochia contained streptococci growing in long chains outside the leucocytes, after the injection, within twelve hours these long chains disappear, and the streptococci were found to be inside the white cells, thus pointing to a direct stimulation of phagocytosis. There is also a great increase in the number of leucocytes in the lochia.

Guizzetti[32] was favourably impressed with the serum in a series of 6 cases. Only one of them, and that a case of mixed infection, proved fatal. The remaining 5 were pure streptococcic infections, and all recovered. The serum used was a polyvalent one obtained from the Pasteur Institute. The amount employed varied from 50 to 100 cc. in 10-cc. doses. The fever rapidly sinks, and all signs of infection disappear. Septicæmia is prevented, or, if already present, runs a mild course. The local action on the uterine mucous membrane is only slight, hence the serum treatment should be combined with local antiseptic treatment.

Grochtmann[33] used Aronson's serum with success in a severe case of puerperal sepsis, after Credé's ung. colloid. had been unsuccessful.

*Rheumatic Fever.*—Menzer[34] holds that rheumatic fever is a streptococcic infection, arising from absorption in the upper air-passages. The local manifestations of arthritis, endocarditis, etc., are reactionary hyperæmic healing processes, leading to the destruction

of the streptococci which have gained a lodgment in predisposed tissues. For the past three years he has treated rheumatic affections by injections of a **Polyvalent Antistreptococcic Serum.** The serum treatment is slower than the salicylate method, but the final results obtained are superior. The serum affords good protection against subsequent attacks, and under its action the prognosis for endocarditis is good. Of 23 cases of acute endocarditis, 15 were absolutely cured, while 6 were left with murmurs, but without any functional impairment. The first effect of the serum is to cause increase of the local manifestations, so that an old lesion is converted into an acute form. Similarly, the effusion is at first increased. From this result some contra-indications to the indiscriminate use of the serum. It is absolutely contra-indicated in chronic stenotic conditions of the valves, since here the reactionary exudation may lead to serious obstruction. Similarly, when effusions—either pericardial or pleural—are at their height, the serum should not be used, as it will increase the effusion. The ordinary dose of the serum in acute cases is 5 cc. In chronic cases it is employed in stages. Thus, every second or third day a dose of 5 cc. is injected till 30 cc. have been given, when a pause of from one to several weeks is made, and the injections are then recommenced. The most successful results were obtained in acute cases which had become chronic, but Menzer claims for the serum treatment that it is superior to the ordinary methods in that: (1) Chronic cases may be cured or improved; (2) The prognosis for endocarditis is better as regards absolute cure; (3) The protection against subsequent relapse or fresh attack is more effectual.

Sinnhuber[35] recommends the serum in subacute and chronic cases, but also warns against its use in acute cases and in cases of stenosis of the valves. He states that not infrequently great prostration follows the use of the serum.

Schmidt[36] tested Menzer's antistreptococcic serum in fifteen patients who proved refractory to the ordinary forms of treatment. The individual dose varied from 5 cc. to 20 cc., and the number of injections from one to eight. The injections were made in the vicinity of the joint chiefly affected. The patients reacted in different degrees. In seven cases there was a marked reaction, with high fever and local manifestations; in five the reaction was only local, without fever; and in the remaining three there was no reaction at all. The local reaction consisted in an œdematous infiltration of the injected area, with great redness of the skin. A specific reaction on the part of the diseased joints was never observed. In six of the cases distinct improvement was obtained. This was specially noted in a patient who for almost a year had been treated in the hospital without any benefit. After a few injections the pain disappeared, and he became fit for work again. In the remaining cases the results obtained were either negative or uncertain. Schmidt concludes that the serum treatment

should only be tried in cases which cannot be cured by ordinary methods of treatment.

*Scarlet Fever.*—Von Bokay[37] has been much impressed with Moser's serum. He treated twelve cases. The minimum dose injected at one time was 100 cc., the maximum was 200 cc. In two cases the injection had to be repeated within twenty-four hours, *viz.*, 160 cc. and 100 cc. In every case the serum caused improvement in the general condition within twenty-four hours. The pulse became slower. Fever and delirium passed off. The fall of temperature was from 0·9° C. to 3·4° C. The rash faded rapidly, or did not develop fully, if the serum was injected very early.

Mackie[38] comes to the following conclusions: (1) Antistreptococcic serum is of distinct value in a certain number of cases of scarlet fever, particularly in those where the throat lesion is severe and toxæmia is going on; (2) Bacteriological examination will give no sure guide as to the cases in which serum will be beneficial, therefore it is advisable to give the serum early and to make the bacteriological examination afterwards; (3) The serum ought to be given early, just as in diphtheria; the longer the disease has lasted, the less likelihood is there of beneficial effect; (4) If the first dose or two have no effect on the temperature, continuation of the serum will probably not be of any value; (5) Even when it does no good there is no evidence to show that the serum does harm, though it is liable to produce urticario-erythematous rashes.

*Small-pox.*—Smith[39], using **Antistreptococcic Serum** in small-pox, obtained a good result. At the end of fourteen days the skin was clean and smooth, covered with superficial scars, but no pitting. The serum shortens the disease, prevents secondary fever and toxæmia from absorption of septic products. There is no pitting, and debility is less marked.

*Staphylococcic Vaccine.*—A. E. Wright[40] has treated various forms of chronic staphylococcic infection by means of injections of sterilized cultures of staphylococci. In obstinate cases these cultures should be made from the particular strain of micro-organism which has acclimatized itself to grow in the patient's organism. The growth should be standardized by estimating the number of cocci. The diseases in which this treatment has proved useful are **Acne, Furunculosis,** and obstinate **Sycosis.** The injections are followed by a negative phase, during which the resisting power of the patient is lowered. Then comes an active positive phase of greatly increased bactericidal power. Finally, after this active stage has passed, there is a comparatively durable period of increased resistance. The negative phase in respect of duration and intensity is directly dependent on the dose of the vaccine, and is only of short duration when the dose is small and the constitutional symptoms produced but slight. Clinical improvement goes hand-in-hand with the demonstrable

increase in the phagocytic power of the blood. The negative phase is sometimes shown by a transient and insignificant increase in the clinical symptoms. Wright seems to use as an initial dose a quantity of vaccine containing from 1000 to 2500 millions of staphylococci. After the negative phase has passed off, as shown by blood examination of the phagocytic index, this number was frequently raised to 5000 millions.

*Syphilis.*—Paulsen[41] has produced a serum by injecting horses with cultures of a pseudo-diphtheritic bacillus which he finds in the blood of patients suffering from secondary symptoms. The serum was very toxic for guinea-pigs, but not toxic for rabbits. Paulsen and Appel have treated 14 cases of syphilis with the serum, but the therapeutic effect was very slow, though a favourable influence was distinctly to be detected.

Metchnikoff and Roux[42] early in the year published an important article on the possibility of producing syphilis in certain of the anthropoid apes. In the chimpanzee, inoculated human syphilis produced primary and secondary manifestations exactly comparable to human syphilis. If, on the other hand, monkeys belonging to the genus *macacus* are inoculated, the disease is much less readily transferred. Thus, of 12 macacus monkeys inoculated, only 4 developed symptoms. This syphilis was extremely mild, lasting only four to eight days, with enlargement of the glands or secondary manifestations consisting only of a few disseminated papules. The trifling nature of the disease led the authors to suppose that the macacus can attenuate the virus of syphilis. To test this view they inoculated a female chimpanzee with the serous secretion from the lesion in a macacus produced by inoculation with human syphilis. Fifteen days thereafter the chimpanzee developed syphilitic symptoms resembling in a striking fashion those of the macacus, *i.e.*, slight squamous patches with superficial erosion and scale formation, but without any tendency to induration, and healing completely in thirty days. Evidently, by its passage through the macacus, the virulence of the syphilitic virus for the chimpanzee had been distinctly diminished. To complete the experiment they inoculated the same chimpanzee thirty days afterwards with human virus. No local manifestation was produced, but about eight days after the inoculation there was a general enlargement of the lymphatic glands. No other secondary symptom has appeared, and the authors conclude that the inoculation of the attenuated virus protects against human syphilitic virus.

*Tetanus.*—Pinatelle and Riviere[43] report a case where the subcutaneous use of antitetanic serum was followed by polymorphous skin eruptions, fever, and general involvement of the joints. The patient, a young man of seventeen, had injured his foot with a rake, and as a preventive measure he received the injection. Three days

thereafter he developed a general rash, then on the fifteenth day there was involvement of the joints, with great pain on movement. As this joint-involvement began in the temporo-maxillary articulation, the diagnosis of commencing tetanus was made. The joints were so painful that the neighbouring muscles were kept permanently in a state of contraction to prevent movement, so that without the rash, there would have been some cause for mistaking the condition for tetanus. In discussing the causation of such symptoms, the authors point out that intoxication is much less frequent with antitetanic than with antidiphtheritic serum. In the case of tetanus the symptoms nearly always (as in this case) follow the use, as a preventive measure, of a small dose of serum. People really suffering from tetanus seem to be able to stand large amounts with impunity.

Wallace and Sargent[44] have employed injections of the antitoxin into the spinal theca. No ill-effects were noted. The cases were of short incubation periods, but three out of the four recovered.

Sicard[45] has found that large amounts of antitetanic serum can be injected into the subarachnoid space without causing any inconvenience. This method is rapid in its action, bringing the serum into direct contact with the nerve roots. The tetanus toxin is constantly being absorbed by the peripheral nerves. Sicard recommends the following plan for using the antitoxin: From 5 to 10 cc. are to be injected at varying depths around the seat of injury; then 15 to 20 cc. should be brought into direct contact with the peripheral nerve trunks, especially those passing through the injured region; lastly, 15 to 20 cc. are to be slowly injected into the subarachnoid space at a temperature of from 37° to 38° C. The injections may be repeated after forty-eight hours.

Rogers[46] has also employed direct intraneural injections. In his case the wound was in the lower extremity, and the intraneural injections were made into the anterior crural and sciatic nerves, and into the spinal canal between the second and third lumbar vertebræ. The symptoms improved at once, but next day returned, so the obturator nerve was also injected, and the spinal injection was repeated. This caused marked improvement, and the patient, a boy, recovered.

*Tubercle.*—Figari[47], having found that the blood of animals could be rendered highly agglutinating, antitoxic, and bactericidal against tubercle bacilli by feeding with **Maragliano's Antitoxic Serum,** has pursued a similar course of investigation in man. Instead of the original antitoxin, he used hæmo-antitoxin, a mixture of 20 per cent solution of Maragliano serum with a vehicle consisting of water, alcohol, and aromatics. The dose is a teaspoonful four times in the day. It was tested on 18 patients, with the following results: There is a marked increase in the agglutinating power of the blood, and antitoxic and antibacillary substances are formed. Clinically the

toxic symptoms are allayed, fever is arrested, while night-sweats and anorexia cease, and the nutrition improves. Five of the patients may be said to be clinically cured, *i.e.*, all symptoms and signs have disappeared. Of the remainder, many have improved considerably, and may ultimately cure. All have benefited by the treatment.

Beraneck, of Neuchatel[48], claims to have produced a **Tuberculin** which is innocuous. He found that the products of the growth of the *B. tuberculosis* varied considerably with the constitution of the medium, while the reaction of the culture varies with the stage of growth. The best culture medium was veal broth, made slightly alkaline with calcium hydrate. After being kept at a temperature of 37° to 38° C. for two to two and a half months, the culture was evaporated to a syrupy condition in vacuo in the cold, and filtered. This gives basitoxin (B.T.). From the bacilli themselves a further toxin can be obtained after washing, drying, and acting with orthophosphoric acid. This is acidotoxin (A.B.). The tuberculin as employed is a mixture of equal parts of A.B. and B.T. It is less toxic than Koch's tuberculin. Daily injections are said to produce leucocytosis, rendering the soil unsuitable for the growth of the tubercle bacilli. Though only slightly toxic, small doses should be employed at first, as a slight reaction produces malaise, lassitude, and lack of appetite. These symptoms disappear after fifteen to twenty days' treatment.

In **Lupus** a local reaction is obtained, and in pulmonary tubercle a slight increase of the secretions is noted. The sputum never becomes blood-tinged, hence hæmoptysis is no contra-indication. Febrile cases, though the reaction was more severe, often did as well as afebrile cases. The ordinary method was hypodermic injection, but where the lesion could be reached, direct application should be employed in addition, *e.g.*, in disease of the larynx, bladder, skin, and articulations. It is claimed that in 60 out of 90 cases treated with this tuberculin, improvement has been shown as regards the general condition, the local signs, and the number of bacilli in the sputum.

*Typhoid Fever.*—Du Rochemont[49] reviews the whole question of the serum treatment of typhoid fever. The value is still doubtful. He treated six cases with serum obtained from the Swiss Institute, but the results obtained were only moderate. The rise of temperature was checked, and the general condition improved, but there was no evidence that the attack was shortened. He was more favourably impressed with Jez's preparation (an extract of the thymus, spleen, brain, and bone-marrow of highly-immunized guinea-pigs). With this extract he treated six cases. In mild cases there was a rapid lowering of temperature, and in more severe cases the course of the disease seemed to be rendered milder. No unpleasant effects were noted, but the rash and enlargement of the spleen might persist even

after the lowering of the temperature, and convalescence seemed unusually prolonged.

*Whooping-cough.*—Manicatide[50] has found in cases of whooping-cough, a bacillus to which he gives the name of *Bacillus z.* He has been able to demonstrate it in the sputum by cultures and by staining films. It was absent only in 5 out of 82 cases. He immunized three sheep and two horses with cultures of the bacillus, and employed the blood from the jugular vein as the source of his serum. In the case of a sheep the injections of the cultures at first caused symptoms resembling whooping-cough. The serum was preserved by adding to every 10 cc. one cc. of a 5 per cent solution of carbolic acid. He treated 81 cases of whooping-cough with the serum only; of these 36 were cured, and the remainder only improved. The cures were obtained in one case in one day, in two cases in two days, in one case in three days, and in three cases in four days, three in five days, one in six days, three each in seven and eight days, two in nine days, and six in ten days, etc. Eight children were cured with a single injection; eighteen required two, and the remainder, from three to six injections. The author concludes that in cases where the disease had not lasted longer than ten to fifteen days, the serum will effect a cure in from two to twelve days. The cases of longer standing are usually much improved, but require several days. The good effect of the serum shows itself in a great diminution in the number, length, and severity of the attacks.

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# INTRAVENOUS THERAPEUTICS.

BY

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Since intravenous injection of various drugs has been properly carried out, it has been shown that this method possesses many advantages over other methods of medication, and in order to render it more popular, F. Mendel[1] discusses several points of interest concerning the method and its results.

With regard to the technique, he says that it is both simple and, when carefully employed, absolutely safe. First, one must boil a platinum-iridium needle in a test-tube for three minutes, and then the injection syringe, which should be entirely made of glass, is sterilized by syringing out with sterile water: the drug in solution is then introduced into the syringe. The arm is then constricted by an elastic bandage or tube, so that the veins become dilated, without the arteries being compressed. A prominent vein at the flexure of the elbow is chosen, and after the skin has been sufficiently disinfected, the vein is steadied by the thumb of the left hand, and the needle is introduced horizontally into the lumen of the vessel, care having been taken to see that there are no air bubbles in the syringe; the piston is then withdrawn a little, and if this sucks up blood, one can be sure that the needle is in the vein. One should be careful not to wound the inner coat of the vessel. The fluid is then injected very slowly into the vessel. After the needle has been withdrawn, a pad of cotton-wool is placed over the site of injection, and the elastic bandage removed. In this way Mendel has injected fluid over fifty times into the same spot in the same vein without causing any reaction.

He next turns to the choice of drugs which are suitable for intravenous injection. These must not have the action of coagulating albumen, nor may they damage the constituents of the blood. They should not produce any changes in the endothelium of the vein, so that thrombosis may be avoided. He gives as an instance of this latter property sublamin, which occasionally produces thrombosis, without having the power of coagulating albumen. A very grateful field for intravenous injection is offered by various preparations of arsenic. One of the most useful preparations is an organic arsenic compound, atoxyl. This drug is used in a 15 per cent solution, and 0·07 gram (circa 1 gr.) is first injected. The dose is rapidly increased to 0·2 or 0·3 gram (circa 3 or 4½ grs.). At first he gives an injection every other day, during the first four weeks, then two injections each week, and lastly only one a week.

He speaks of excellent results which he has obtained in **Chlorosis,**

**Neurasthenia, Hysteria, Graves' disease,** and in a variety of **Tuberculous** affections. In **Skin diseases,** too, the method presents many advantages over the more usual methods of employing arsenic, and is followed by more constant action.

In the treatment of **Tuberculosis,** he thinks that a great deal can be accomplished by the combined arsenic and tuberculin treatment. He finds that the effect of intravenous injection of tuberculin is just what one aims at, namely, a small general and marked local reaction. Starting with ½ mgram. of tuberculin, with an ordinary dose of atoxyl, he injects atoxyl alone every second day, from three to five times, according to the strength of the reaction, and then gives a combined injection, this time using 1 mgram. of tuberculin. In this way he proceeds until he reaches 5 mgrams. He recites some of the results obtained by this method, which he considers very satisfactory.

He deals, in conclusion, with the injection of sublamin, which he regards as a better mercurial preparation than hydrarg. perchlor. for the hypodermic, intramuscular, or intravenous injection. The first mentioned is unsatisfactory, while of the two latter the intramuscular possesses distinct advantages over the intravenous, inasmuch as the solution is rapidly absorbed from the muscular tissue, and causes but little local effect, but the intravenous application is apt to be followed by thrombosis, which, although it passes off completely after a short time, is a great disadvantage. His results, both by intramuscular and intravenous injections, were very good.

Barrows[2] has recorded several cases of **Puerperal Septicæmia** which were successfully treated by intravenous injection of formaldehyde, after the ordinary methods of treatment had failed. He uses a 1-5000 solution in sterilized water, or normal saline.

Dr. Netter[3] enumerates a number of infectious diseases that have been promptly relieved by the use of colloidal silver, or *collargol*, which was introduced as a therapeutic agent in 1897 by Credé. It is an allotropic form of silver which is soluble in water and in the secretions of the body. Colloidal silver is used chiefly for external applications in the form of a salve, 15 to 100 (*Unguentum Credé*), and in intravenous injections in a solution of 1 to 200. The amount of salve used in an application is 15 to 45 grains, according to whether the patient is a child, a youth, or an adult. For intravenous injections the amount varies from one-half to five-sixths of a grain. The use of collargol has grown widely, and many physicians report remarkable cures in many different diseases. Wenchebach cites two cases of severe **Infectious Endocarditis** that were cured by means of the injections, while Klotz obtained wonderful results in a **Septic Endocarditis.** The author reports ten different kinds of cases in which he had excellent effects from this remedy, among which was a case of **Pneumonia** in which, after intravenous injections, the fever dropped immediately and disappeared entirely in three days. A suppurating

**Cerebrospinal Meningitis** was modified as suddenly, apyrexia the day after the injections, and a rapid convalescence. The results were no less satisfactory in a severe **Scarlatina,** two toxic **Diphtheritic Anginas,** and in three **Adynamic Typhoids.** The last observation was of a medico-surgical nature. A physician seized with **Pyohæmia** found almost instant relief after a single application of collargol. Both the patient and the nurse who made the application noticed a distinct metallic taste. The return of strength, appetite, and ability to move came the following day. It is not certain that collargol acts antiseptically. Perhaps there is a neutralization of the toxins which produce such rapid changes in the body, and perhaps there is stimulation of the defensive power of the organism, or a catalytic action.

H. Schmidt[4] deals with the same subject. He says that the idea emanated from the wish to introduce some soluble form of silver or its salts in order to allow its disinfecting action to take place internally. This internal disinfection proved to be possible in two ways; an ointment containing colloidal silver, otherwise called collargol, when rubbed into the skin, has the effect of allowing the silver to pass into the tissues, under ordinary circumstances. Usually, a 15 per cent ointment is employed, but the method is ineffective in cases when the skin is anæmic, either from advanced age or cachexia, or when it is too thin or leathery. The second way is by intravenous injection, and since this procedure has been shown to be absolutely free from danger. the rapidity and certainty of action render it preferable to the former. In recent times, the preparation has been improved, and the new collargol appears in the form of shining particles, which are soluble in distilled water, in the proportion of 1–20. It is stable, and does not decompose by keeping for a long time in either cold or warm temperatures. The solution is much less sensitive to chemical influences than the old preparation was, and even in great dilution it exercises an inhibitory action toward the growth of bacteria. Schmidt advises the injection to be carried out as follows: the syringe should have a capacity of 5 cc. or 10 cc. (approximately 85 to 170 minims). and should be boiled, and then rinsed in sterile water. The needle is introduced horizontally into the vein, which is compressed by an assistant, and as a proof that it lies in the lumen, blood will issue from it. Before introducing the needle, the arm should be constricted by a rubber tube until the veins protrude. The skin at the site chosen for injection is thoroughly disinfected. When the operator has satisfied himself that the needle is in the vein, he adjusts the syringe to the needle and withdraws the piston (the syringe being nearly, but not quite filled) a little, and thus if there is any air in the needle or syringe, this will rise to the top and will not be injected. The needle is then slightly withdrawn, so that the coat of the vein is not damaged, and, lastly, after releasing the constriction, the fluid is very slowly

emptied. The new collargol can be used in either 2 per cent or 5 per cent solutions, and thus in severe cases a large quantity of silver can be introduced at a time. The injections have to be repeated in bad cases in twelve or twenty-four hours, as the silver rapidly passes out of the system. The doses which he has employed vary between 0.05 gram and 0.1 gram (about 0.77 gr. and 1.54 gr.). Schmidt relates the histories of twenty-four patients treated in this way with good results, and, in conclusion, briefly discusses the theories expounded of the method of action.

On the other hand, experimental evidence is entirely opposed to the belief that the intravenous injection of **Antiseptics** is of any therapeutic value. Shaw[5] tested chinosol, guaiacol, and formalin in the case of animals infected with the *bacillus pyocyaneus*. In all cases the injected animals died more quickly than the control animals injected with the *bacillus pyocyaneus* culture alone, and the organism was in each case recovered from the heart blood. Even in the case of administration of large doses of formalin solution, which, if they had been retained in the blood would have rendered it a 1–1500 solution of the antiseptic, there was no retarding growth on cultures obtained from the heart-blood at necropsy. The antiseptic appears to be rapidly taken up by the tissues, and such injections can have but the very smallest amount of therapeutic value in **Septicæmia.** Injections of formalin were also tested in rabbits infected with **Tuberculosis.** One animal which received a submaximal dose of formalin died in thirty minutes after injection, and the necropsy appeared to show that the death was due to acute miliary tuberculosis of the lungs, impeding the blood-flow through the lungs, and preventing the rapid passage of the formalin through the pulmonary capillaries. The formalin thus concentrated in the lungs would interfere with their normal functional activity. This experiment indicates a probable danger in the use of these injections in pulmonary tuberculosis; other experiments appeared to show the absence of any therapeutic effect on the disease. The experiments were rather few in number for a general statement to be made.

Fortescue Brickdale[6] has also made an elaborate experimental investigation of the whole subject, and fully reviews the literature. His paper is one of the most important publications on the subject which has yet appeared, and its final conclusion is as follows :—

Reviewing the subject of the intravenous injection of drugs as a whole, it will be seen, that during the past 250 years, the various attempts which have been made to introduce the practice generally have, after more or less extended trials, been invariably abandoned. Recent attempts, though scientifically far more justifiable than those which preceded them, cannot be said to have met with a much greater measure of success; and although modern methods have undoubtedly reduced the inherent dangers of the practice, modern knowledge has

also shown that they are far more formidable than the earlier experimenters imagined. With regard to the direct injection of antiseptics, the clinical evidence, open as it is to so many inevitable fallacies, gives at best only a very qualified support to the idea that such a proceeding can influence favourably the course of a bacterial disease; whilst the experimental evidence, considered as a whole, has hitherto been distinctly against it. The discovery of a drug of such selective capacity that, while injuring fatally the cells of living bacteria, it would leave the cells of the host entirely uninfluenced, seems at present a remote contingency; and until unquestionable experimental evidence of the existence of such a substance is forthcoming, it would seem more rational to abandon further clinical trials, and thus to close another chapter in the history of the somewhat ill-fated "Chirurgia Infusoria."

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# RADIO-ACTIVITY AND ELECTRO-THERAPEUTICS.

BY

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The year 1904 has not been remarkable for any new discovery in radio-activity or radio-therapeutics. The literature shows, however, that the number of workers engaged in clinical studies has largely increased, and the amount of work done in hospitals is noteworthy. It is, further, interesting to notice that much fewer sensational articles have appeared in the press, particularly in the lay papers, during the past year; but the workers in this special department are accumulating evidence steadily, if somewhat slowly, which will doubtless in the end enable the profession to judge correctly of the value of all such remedies, and the comparative value of each in particular affections.

While the list of diseases in which electro-therapeutics are being employed is more extensive than before, one might repeat what was said in this work a year ago, that the greatest attention has been paid to the treatment of patients suffering from **Lupus, Rodent Ulcer,** and **Superficial Epithelioma.** Another year's work tends to confirm the view that, so far as lupus is concerned, we have now a number of methods or agents by which this troublesome affection can be controlled. The comparative value of the different forces in this disease cannot yet be stated, but, as will be seen from some of our remarks farther on, considerable doubt has been expressed as to the value of light treatment as compared with X-rays. To some extent the same may be said of rodent ulcer, although in this country at least, there would seem to be fewer people employing light treatment than X-rays for this affection. When we come to speak of epithelioma, and probably sarcoma, it is safe to say that the light treatment is not much in evidence, and all attempts at eradication of superficial epithelioma (not rodent ulcer) are being made by means of other agents.

Unfortunately, nothing has occurred during the past year to throw much light upon the great problem of how to reach the deeper-seated malignant diseases in the body. No doubt much has been done by way of experiment, but practically the results have, so far, been disappointing. Further, in not a few instances superficial cases in which success has been claimed, have developed similar conditions more remote, not necessarily as a result of treatment; and consequently many operators have to record the fact that while for a time the superficial part of the disease was commanded, they had to submit to the disappointing results of invasion of the deeper tissues, without being able by any means in their power to follow up the treatment with any prospect of success.

Another matter to which considerable attention has been paid of late,

is the serious result of distressing symptoms occurring in *operators* and *nurses* who are exposed to the influence of X-ray tubes for hours daily. There can be no doubt that there is a steadily increasing number of sufferers, from ulceration of the hands and other parts of the body. As usual, these sores are exceedingly difficult to heal, and in more than one instance the results have been fatal. To a certain extent, no doubt, these effects may be due to needless exposure or even carelessness; but it is only fair to point out that nurses and others, assisting medical men in the routine work of the outdoor department of a hospital, should be protected as far as possible from such deleterious influences; and managers of hospitals are already engaged in seriously considering what is to be done by way of protecting those engaged in this department. So far as the reports show, the great risk, of course, is with the X-rays, and it is not unlikely that before long some large protective shield or set of rooms will be devised in hospitals to meet this increasing difficulty.

Many useful works have appeared during the past year. Amongst the noteworthy additions to the literature, Freund's *Elements of General Radio-Therapy* will take a high place. Professor Bouchard's great treatise upon *Medical Radiology* will also doubtless be recognized as one of the classical works in this new department of science. Dr. Freund states in his preface (and most workers will be inclined to agree with him), "Although this branch of science can hardly be said to be more than in its infancy, gaps in our knowledge having everywhere to be filled and rubbish to be removed, we have already achieved brilliant theoretical and practical results, leading one to hope that radio-therapy will obtain an acknowledged place among our methods of treatment. One need only refer to the undeniable and astonishing results achieved in the department of **Skin disease,** which has so markedly attracted the attention of dermatologists. Nevertheless, the claims of radio-therapy as a treatment for disease are still disputed; from time to time medical men, among whom are some of repute, although none can claim personal experience, feel called upon to refer to Röntgen-therapy, d'Arsonvalization, etc., as exploded and soon-to-be-forgotten methods. True, such croakings may deter the scientific ardour of others, but cannot really impede the progress of radio-therapy. Science is progressive. Its development is as necessary and irresistible as the tide."

### X-rays and Diagnosis.

For one paper now published dealing with diagnosis, nine can easily be found which refer to radio-therapy. It must not be understood that less interest is being taken in this department. On the contrary, both in hospitals and in private practice X-ray photographs have now taken a definite place in the routine work of medical practice. The reader has only to look at some of the recent text-books upon the subject to realize how much work is being done in a quiet, and as just

said, routine way. The bones and hard tissues naturally afford opportunities for the largest number of cases where X-rays prove valuable in diagnosis. Stone in the kidney, and calculi elsewhere, are being diagnosed more frequently and with greater accuracy. What is specially noticeable, however, is the still growing tendency amongst physicians to make use of the X-ray screen and radiogram for diagnosis in diseases of the thorax, and indeed in other cavities. Thus the examination of the lungs, the heart, the pleural cavities, the movements

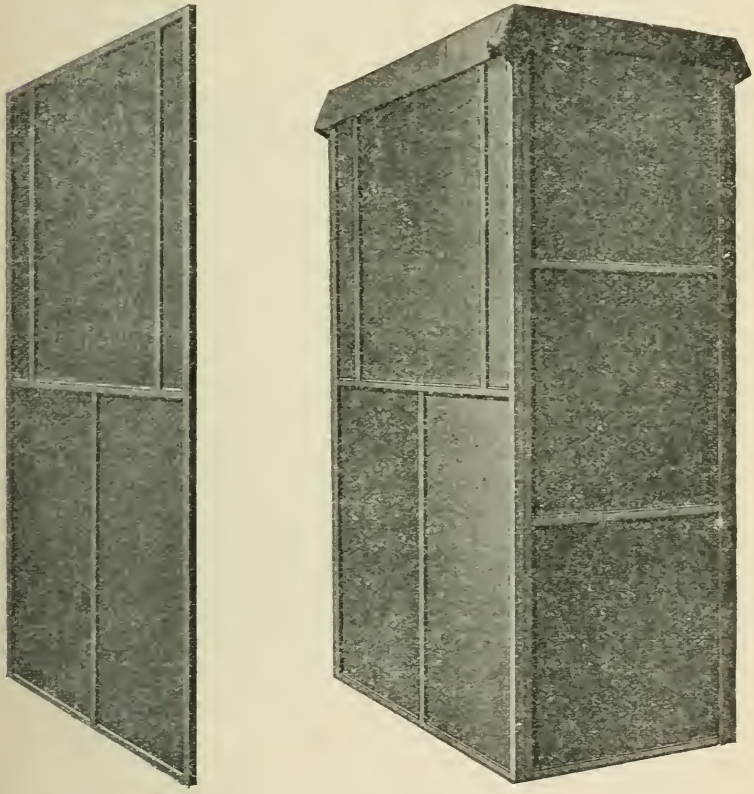

*Fig. 1.*—Screen as used by the writer, see next page.

of inspiration and expiration, as influenced by pathological conditions in the region of the diaphragm (or spasms in a case of asthma) is most noticeable.

In order to do this several things are essential. To begin with, all extraneous light in the room should be excluded. A really good result cannot be obtained unless everything be dark except that part of the screen opposite the part to be examined. Various methods have been

attempted to secure this. Thus Gaiffe has enclosed the X-ray tube in a complete vulcanite cover or case, and of course the room itself is darkened while this is being used. Personally, I prefer such a screen as I now use, which can be, with very little trouble, turned into a dark box into which the operator can go while the patient stands outside in full light (*Fig.* 1). In this way a careful examination of the parts can be made. Further, during the examination the tube ought to be kept in exactly the same condition, by regulating the vacuum so that the voltage and milliampèrage remain constant. This cannot easily be done in a darkened room, but by using the arrangement which I have mentioned it is possible to get a satisfactory examination of the patient, while an assistant can attend to the patient and the tube.

For details of Röntgen diagnosis, reference may be made with great confidence to the following works: *The Röntgen Rays in Medicine and Surgery*, by Francis H. Williams, M.D. (Macmillan & Co.), *X-ray Methods and Medical Uses of Light, Hot-Air, Vibration, and High-Frequency Currents*, by S. H. Monell, M.D. (E. R. Pelton, New York), *Röntgen Ray Diagnosis and Therapy*, by Carl Beck, M.D. (Sidney Appleton, London), *The Röntgen Rays in Therapeutics and Diagnosis*, by William Allen Pusey, A.M., M.D., and Eugene Wilson Caldwell, B.Sc. (W. B. Saunders & Co., London).

### Apparatus.

*Coils.*—It was noted last year that most instrument makers were striving to improve the standard of their coils, and further, that attempts were being made to suit the requirements of different operators by means of variable primaries and condensers. There is a notable tendency in many directions to use large-sized coils. Messrs. Isenthal are now offering coils up to 50 or 60 inches spark in length.

*Influence Machines.*—Still further improvements have to be recorded in the Voss type by Schall; and the mica-plate machine by Wagner is excellent. Gaiffe's sectorless form of ebonite plate run at high speed is doing excellent work. Dean, of London, is also making an efficient machine with ingenious electric-light heating arrangements for drying the plates. Should this device prove valuable, it will be largely appreciated by workers in this country.

*Interrupters, Crookes Tubes, Localizers and Gauges.*—Of all this group of apparatus it may be said that many improvements have taken place, but for the most part they are simply modifications of former types. For instantaneous work, Hirschmann's large tubes are excellent, and Dean has lately improved his self-regulating tube very much.

*Finsen Light.*—There is a general consensus of opinion that Finsen's original lamp is the best, notwithstanding all the drawbacks and difficulties in treatment which are the necessary accompaniment of light treatment. The smaller form known as the Finsen-Reyn lamp,

suitable for treating one patient at a time, and portable, is now considered one of the very best of all the smaller kinds of light apparatus.

*Apparatus for production of X-rays and High-frequency Currents.*—Considerable attention has been paid to two new forms of apparatus for the production of high-frequency and X-ray currents. The one has been brought out by Gaiffe, and in this country it is the better known of the two ; the second is that of Koch, and is sold in this country by Mr. Schall. The principles involved in the two machines are practically the same. To begin with, the alternating and not the continuous current is used, and as an example of the kind of motor generator that

*Fig.* 2.—The writer's Laboratory, showing Gaiffe's new X-rays and High-frequency Apparatus, and 20-plate Influence Machine.

is required for this, it may be pointed out that Gaiffe supplies one for the 250-volt continuous current, which transforms this into one of 275 volts, 14·7 ampères, and the revolutions are 2860 per minute. The current is conducted to suitable switchboards with the usual measuring apparatus, and then passes into a closed-circuit transformer, where the current is raised to 30,000 volts alternating. By means of suitable glass condensers this current is utilized for the production of the high-frequency currents.

It need hardly be pointed out that the current coming from the closed-circuit transformer is dangerous, and M. Gaiffe has taken the precaution to have this arranged in the deepest part of the case, with a

suitable cut-out, so that the moment the door is opened the current is shut off. By means of such an arrangement one can get, with a suitable resonator, very great variation in *effluves*, from the shortest to the longest, and it is comparatively easy to administer 1000 milliampères on the couch during auto-condensation (see *Fig.* 2). When X-rays are required, one side of the alternating current has to be cut out, and Gaiffe does this by means of the well-known Soupape or Villard tube.

Koch's instrument is in principle essentially the same as Gaiffe's. He employs the alternating current through a choking coil, a rheostat, and a transformer with closed iron circuit (*Fig.* 3). When used for

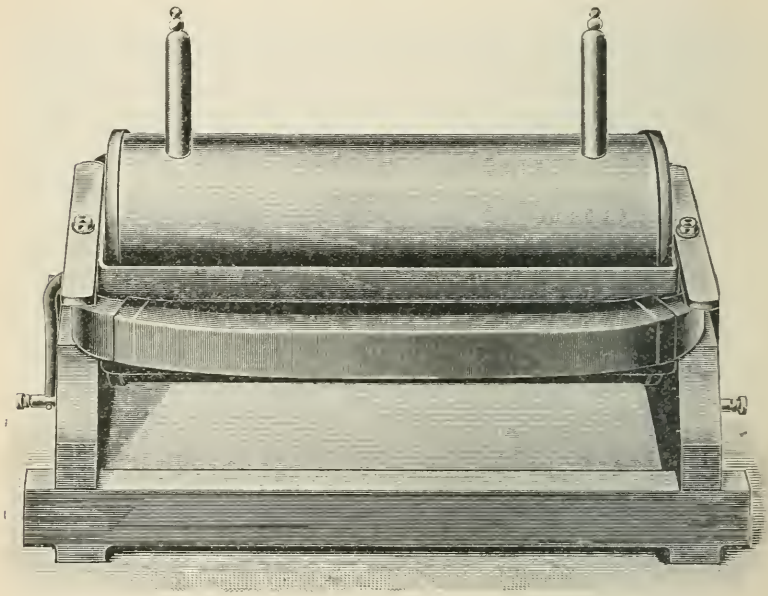

*Fig.* 3.—Koch's Apparatus.

unidirectional work, a synchronous alternating motor carries a straight metal rod at the end of an ebonite shaft, upon which is fixed the mechanical rectifier (*Fig.* 4). The following advantages are claimed for this system, as compared with coils and interrupters: The discharges are of long duration compared with those of a spark coil; there is no current in the wrong direction, and, in consequence the wear and tear of the tubes is smaller and the light steadier than that obtained with any other method. The apparatus is silent, there is no tedious cleaning of interrupters, no repairs in consequence of wear and tear; it is simple to work, the only attention required being the oiling of the bearings of the motor. These advantages are great, and Mr. Schall thinks the apparatus is sure to replace many spark coils wherever

they are wanted for hours every day, and especially on alternating circuits ; in this case, a small dynamo has to be connected with the alternating motor.

The advantages and disadvantages of Gaiffes' system have been summed up by the writer in the following way, in a paper published in October, 1904 :—

These new instruments will doubtless be first of all valued in centres where the alternating current is employed. Further, there is a risk of these high-potential currents destroying the motor generator, as is shown by the fact that of the first instruments laid down in Scotland, M. Gaiffe's own representative, while fitting them up, seriously injured two. In one case, a new motor generator had to be got from Paris. It is only fair to mention that they have now added

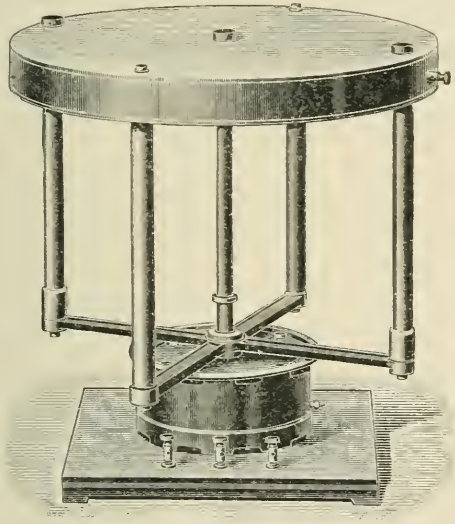

*Fig.* 4.—Koch's Rectifier.

condensers, which they say will be sufficient to prevent such a thing happening again. Secondly, every worker knows what a nuisance even the best of interrupters has been ; and the fact of being able to obtain high-frequency currents and X-rays without the use of an interrupter, will tempt many to go in for this new apparatus. Thirdly, the advantage is great of an installation which can measure the current much more accurately, either for photographic or therapeutic work. I am inclined to think that M. Gaiffe probably claims a little too much upon this point, because many workers pointed out the advantage of it long ago. The current passing through the X-ray tubes, even from coils, can be measured by means of a suitable

milliampère-meter (with a moving coil) reading from a tenth to five or ten milliampères. Personally, I have been using a milliampère-meter between the secondary terminals and my coil and the X-ray tube for a long time. However, the interrupter has always been a little difficulty in this respect. Now, by looking at the voltage and the milliampèrage, and by employing an osmium or regulating tube, the quantity administered to the patient from day to day can be very accurately measured. Considering the tendency to over-reaction, and the disastrous results of burning, this should be a valuable aid to surgeons. Lastly, M. Gaiffe's machine as it stands is exceedingly quiet, and much more pleasant than the coil to work with, both from the patient's and operator's standpoint, and everything is completely under the control of the operator.

It has, however, some disadvantages. To begin with, the apparatus is very costly. In the second place, the high-tension currents, after passing from the transformers, are dangerous. It need hardly be pointed out that the risk would be great if anyone touched the high terminals or connections of the transformers giving 30,000 volts with a large ampèrage. Again, the practical arrangements at present for changing from X-rays to high-frequency, are rather troublesome, and cause waste of time. Lastly (and this I consider a most serious question, to which reference will be made further on), do the Villard valves completely destroy one side of the currents ?

From my own experience of M. Gaiffe's apparatus, which I have now had for some time, I am satisfied that for high-frequency work it is likely to prove a very practical machine. At the same time, for the finest radiographic work, where very short or instantaneous exposure is required, it has, so far, not been equal to a large coil with a powerful Wehnelt interrupter. As yet I have seen nothing done by this apparatus which compares with the photographs to be seen in Zeimssen's classical *Atlas*. The explanation may be, because it has not been sufficiently long used, and the result a matter of degree. Further, as I have indicated, I am not yet certain that the unidirectional current is completely obtained, and if this be not so, the resulting negatives will not have the clearness and definition required for the highest work. Again, as I have indicated above, the behaviour of different makers' tubes as regards the tendency to lowering of the vacuum, is a thing which must be carefully tested before a definite opinion can be offered. Up till now, my experience in this direction has been very unfortunate. and I have already lost several good tubes.

It may be useful to point out that, to a large extent, many of the above advantages can be got at comparatively little cost by means of coils, provided there is an alternating current at our disposal. Not only can interrupters be dispensed with, but accurate measurements can also be obtained by a single arrangement. Getting rid of the arc between the terminals has always been considered a difficulty.

Long ago I satisfied myself from some experiments which I performed when attempting to get a unidirectional current in high-frequency apparatus, that by placing a large condenser between the terminals of the secondary coils, the large flame-like discharge across the spark gap could be got rid of. Mr. Schall has confirmed this in a communication to me, and further experiments since I have received M. Gaiffe's apparatus have proved conclusively that much remains to be done in this direction. With an ordinary 16-inch spark (Dean's) coil, I have been able to get easily one thousand milliampères on the couch by simply introducing a pair of large-sized Leyden jars in the position indicated, and the *effluve* from Dean's ordinary resonator, with an oil condenser, has surpassed anything which Mr. Dean himself has ever seen. Further, it need hardly be pointed out that in this case, just as in M. Gaiffe's or Professor Koch's apparatus, one would have all the details as to voltage, milliampèrage, and periodicity and accuracy in measurement, without the troublesome interrupters. Workers possessing an ordinary coil, therefore, may find hope in the fact that the new apparatus will not altogether displace the old. On the contrary, there will most likely be a place for both.

### *n*-Rays.

Any reference to the past year's work would be incomplete were the names of M.M. Blondlot and Charpentier omitted. The former observer has published a series of papers in which he describes certain rays which he has designated *n*-rays. Most careful references have been given to various sources of production. The physical properties have been described with great accuracy, including their position in the spectrum. The most interesting feature of *n*-rays is their power to cause luminescence or phosphorescence, and it is mainly by this test that they have been demonstrated. Prof. Charpentier has followed up the work of M. Blondlot by describing certain physiological studies of these or similar rays. The fact that they were said to be produced with ease when muscles were acting, and were given out whenever nerves were stimulated, has caused a great deal of criticism, because no one can over-estimate the value of such phenomena, were it definitely established that such emanations proceeded from the animal tissues. Rarely has any scientific announcement caused such commotion, and the curious thing about the criticism is the utter inability of certain observers to see any such phenomena as have been so carefully described by the original workers. In this country some observers have stated their conviction of the genuineness of the phenomena, notably Walsham and Leslie Miller[1]. On the contrary, there are men who have completely failed. Obviously the simplest way of arriving at a conclusion, is to cause those people who say they can observe a change in phosphorescence during the action of a muscle or nerve, to state when they do and when they do not

see it, while the person making the tests alone knows the moment the experiment is being tried. Those interested in the subject may read with interest the description of a series of experiments[2] made by Wood, in which the one who believed in the phenomena was placed in front of the screen, and asked to say when he thought he saw any results upon it, the action of the muscles being unknown to him. In this particular series of experiments the result was a failure. The subject is being discussed in all its aspects, and those who say they can see the results, and those who cannot, are busily engaged in trying to explain the difficulty. Future developments will be watched with great interest.

## Therapeutics.

*Finsen Light.*—It is impossible to refer to this subject without making reference to the loss which medical science has sustained by the death of Professor Finsen. His great yet simple life will remain one of the noblest examples in our profession, of perseverance and devotion to duty under the most trying circumstances of health. Speaking of his great life's work, therefore, it may at once be said that no one who has read his last book, giving the results of 800 cases, can fail to see that Finsen beyond all doubt established the fact that ultra-violet light is a powerful agent for good in the treatment of **Lupus.** When we come to consider its comparative value, however, it does not necessarily mean that in the end a superiority will be established over other agents which have, so far as one can judge from the literature, been preferred in this country. The question, however, of the best agent in cases of lupus cannot yet be settled. Further experiment is required, and doubtless the comparative value of all the agents will be more appreciated as the years roll on. Those who are interested further in the subject will find many articles in the journals bearing upon this point, and special reference may be made to the *British Medical Journal* of April 23, 1904, which is largely devoted to the consideration of these newer agencies.

*Radium.*—When Becquerel's great work became known, and the marvellous discoveries of the Curies were recorded, it was certain that much would be written about the prospective value of radium in the treatment of disease. No doubt too much was expected, and consequently there followed the inevitable disappointment. In last year's *Medical Annual* it was made quite clear that radium possessed therapeutic value. It had to be remembered, however, that for the most part its claims in the treatment of disease were much the same as those from X-rays, light treatment, and similar agencies. Whether it turned out to be of therapeutic value or not, the extent of its use would only be great if it offered as great or greater advantages than others. As a result of the earlier trials, many workers were inclined to set the agent aside altogether; but, as always happens

in the history of such things, scientific inquirers, through the periods alike of enthusiasm and disappointment, continued their observations, and there can be no doubt that many men have recorded beneficial results. Even now, however, some are sceptical; thus W. W. Keen, of Philadelphia, after trying radium of various strengths up to 1,800,000 radio-activity, in 22 cases, says, "To sum up his experience, in not one single case had there been the slightest benefit, except in one feature, and that was as to pain. Unquestionably, in cases of carcinoma patients had suffered less, and in a large number pain had disappeared." On the other hand, there can be little doubt that small lesions of **Lupus** can be treated successfully, but the principal value of radium at present lies in the treatment of **Rodent Ulcer.** When these are small, there can be no doubt that the results are gratifying enough. When, however, lesions are of great extent, until at least we possess more of the agent, X-rays or some other force will most likely be preferred. Nevertheless, the fact that one can get good results even in minor cases without the great trouble and expense involved in more complicated apparatus, leads us to hope that further experience will so increase our knowledge as to enable the medical profession to make greater use of radium in the future. Those interested in the subject may be referred to the following papers, all of which may be read with advantage: "Further Observations on the Therapeutic Value of Radium and Thorium," by J. M. H. Macleod, M.A., M.D., M.R.C.P.[3]; "Some of the Physical Properties and Medical Uses of Radium Salts, with Report of 42 Cases Treated by Pure Radium Bromide," by F. H. Williams[4]; "Radium in the Treatment of Neoplasms," by Exner[5]; "The Present Position of Radium in Therapeutics, with a Summary of the Finsen Light and X-ray Treatment," by C. M. O'Brien, M.D., L.R.C.P.[6]; "On the Treatment of Cancer with Radium Bromide," by H. G. Plimmer, M.R.C.S. Eng., F.L.S.[7]; "Observations on Radium," by Max Einhorn, M.D.[8]; "Radium: Induced Radio-activity, and its Therapeutical Possibilities," by Samuel G. Tracy, B.Sc., M.D.[9]; "On the Therapeutic Effects of the Salts of Radium," by John Macintyre, M.B., C.M., F.R.S.E.[10]; "Treatment by Radium," by O. Lassar[11]; "A Case of Giant-celled Sarcoma of the Lower Jaw Treated by Radium," by Robert Abbe[12]; "Radium, with a preliminary note on Radium Rays in the Treatment of Cancer," by Margaret A. Cleaves, M.D.[13]; "Tuberculous Ulceration treated with Radium Rays," by Colin Campbell, and "Malignant Disease treated with X-rays," by C. Thurston Holland[14]; "The Present Position of Radium in Therapeutics, with a *resumé* of the Finsen Light and X-ray Treatment," by C. M. O'Brien, M.D., L.R.C.P.[15]; "The Subtle Force of Radium," by Robert Abbe[16]; "Radium Bromide: Notes on some cases in which it has been tried," by Jas. Mackenzie Davidson, M.B., C.M.[17]; "A Comparison between the Medical Uses of the X-rays and the Rays

from the Salts of Radium," by Francis H. Willikins[18]; "Some of the Physical Properties and Medical Uses of Radium Salts, with Report of 42 cases treated by Pure Radium Bromide," by Francis H. Williams[19]. The following papers are also interesting: "The Relative Efficiency of Radium Salts," by William Ackroyd, F.I.C.[20]; "A Few Words Concerning Radium," by Robert Abbe[21]; "The Bactericidal Action of Radium Rays," by R. Pfeiffer and E. Friedberger[22]; "Effects of the Röntgen and the Radium Rays on Cell Division," by Perthes[23].

*High-frequency Currents.*—These are being used in a larger number of cases than ever, and a large and increasing number of medical men are becoming possessed of one or other of the various forms of apparatus now in the market. On the other hand, greater discrimination is being exercised in their use. Certainly much less has been heard during the past year about the effect of high-frequency currents in the treatment of cancer. There can be no doubt that in the vast majority of cases they are being used for **Nervous lesions,** but they have also taken a place in the treatment of **Cutaneous affections,** such as rodent ulcer, lupus, and even superficial epitheliomas. In this country at least, however, they are not being so extensively used as the X-rays in the conditions just mentioned.

*X-rays.*—**Carcinoma.**—Last year it was pointed out in this *Annual* that undoubtedly X-rays had proved advantageous in superficial epitheliomata, and another year's treatment has simply confirmed the views expressed twelve months ago. That a large number of cutaneous epitheliomatous tumours have been improved, or have disappeared altogether, under the treatment of the X-rays, is beyond any question. Whether or not recurrence will prove more or less disappointing in the future, we cannot yet say. Many observers have again recorded the beneficial effects as regards relieving pain, and upon this point few of them throw any doubt. On the other hand, deeply-seated tumours have so far proved too much for X-rays, in spite of their power of penetration, a fact which suggests the possibility of other influences from the X-ray tube being at work where success attends the applications. Some beneficial results have also been recorded within cavities which communicate with the surface of the body. The question of the effects of **Fluorescent substances,** with or without combination with the X-rays, and about which Morton[24] has already given some results, is still under discussion (*see* p. 26). Tappeiner[25] describes a number of experiments to prove the activity of fluorescent substances on amœbæ. He considers that painting the surface with eosin lotion aids very much the action of the sun's rays, and is particularly efficacious in labial and nasal carcinoma. Whether the same results would be got with X-rays remains to be seen. Lapine and Boulud[26] have made some experiments upon the action of X-rays upon nutrition. Experiments were conducted upon animals or the tissues of different organs, and seem to show that X-rays possess a

very powerful detrimental action upon nutrition. Reference may here be also made to papers by F. Osmund Stedman, M.B., B.S. Lond.[27]; J. Herman Branth, M.D.[28]; John Macintyre. M.B., F.R.S.E., F.R.M.S.[29]; E. A. Peters[30]; Samuel Beresford Childs, A.B., M.D.[31]; William S. Newcomb, M.D.[32]; Mirhan K. Kassabian, M.D.[33]; G. H. Stover, M.D.[34]; Chisholm Williams, F.R.C.S. Ed., etc.[35]; Sinclair Tousey. A.M., M.D.[36]; Daniel R. Brower. M.D., of Chicago[37]; Mertens[38]; J. Alfred Codd. M.D., B.Sc. Lond.[39]; Sir Isambard Owen, M.A., M.D. Cantab., F.R.C.P. Lond.[40]; Alexander Bruce[41].

Many papers published during the year fully confirm the advantages of X-rays in **Rodent Ulcer.** The only question which remains is their relative value as compared with the other agents. What the final conclusion may be cannot at present be stated. Of **Lupus** it may be said that, carefully administered, the results of of X-rays in this affection have been most satisfactory. It may, of course, be easily added, and the remark applies to all affections in which this agent is applied, that grave dangers exist from too great reaction. Unfortunately, the conditions of the tube which lead to disastrous results are not yet fully understood. Further experience, will, however, ensure less trouble in the future, and many experiments are being made with a view to discovering what the conditions are in those tubes which show a tendency to excessive burning.

Many workers have recorded the results of X-rays in **Sarcoma.** Coley's well-known work[42] has stimulated others to try the effect of one or other of these forces in this affection. It is questionable if more can be yet said than was reported by him eighteen months ago: "Thus far we have proved that the X-rays have a very decided inhibitory action upon the various forms of sarcoma, in certain cases sufficient to cause the entire disappearance of inoperable tumours. Yet there is a strong tendency to local or general recurrence, and in no instance has sufficient time elapsed to warrant us in considering the patient cured. Good results cannot reasonably be looked for without prolonged treatment extending over many months, and in some cases, years."

Mertens (*op. cit.*) reports a successful case of treatment of a large malignant growth of the scapula in a girl of eleven, and other workers have reported similar results.

Riehl[43] describes a case of **Chronic Eczema** supposed to be cured, and in which the cicatricial shrinking caused the neck and upper part of the chest to be drawn together as after a severe burn. With a view to prevention of serious results, Holzknecht draws a distinction between pre-reaction or superficial inflammation of the skin, and the most serious reaction, which is often latent and follows later. He thinks that a tube which brings on this pre-reaction should be discarded. Beclere[44] thinks that the disadvantages in radio-therapy should be carefully watched, and the dose regulated by means of Benoiet's radio-chronometer, and Levy Dorn considers the safe maximum

exposure is twenty times that used for photographing the adult pelvis. As a rule the plate is 60 cms. distant.

Martin F. Engman[45] recommends the following for **X-ray Dermatitis**, with a view to stopping the itching, assisting in the repair, and the keeping of the surface aseptic: Boric acid, 12 drachms; zinc oxide, starch, and bismuth subnitrate, of each 1 ounce; olive oil, 1 ounce; lime-water, 3 ounces; lanolin, 3 ounces; rose-water, 12 drachms.

E. J. Brown[46] reports a case of **Leukæmia** in which X-rays proved advantageous. He also reports good results in a case of **Pseudo-Leukæmia.** Frank P. Vale[47] reports improvement of **Glandular Tuberculosis** in a case of glands of the neck. Subsequent mischief occurring in the head, the rays were applied three times a week with some improvement. Marsh[48] speaks well of X-ray treatment in a case of **Mycosis Fungoides.** He describes the result by saying that the parts are "now symptomatically well," a slight hyperæmia of the skin being all that remains. Levack[49] treated three cases of **Nævus** with beneficial results. He considers the treatment, if tedious, satisfactory, and an improvement upon the older methods. Newcomet[50] has tried X-rays in **Tuberculosis of the Larynx,** and is of opinion that amelioration of the symptoms may be expected where there is ulceration. Weber[51] describes a case of **Splenomyelogenous Leukæmia** in which he considered there was marked improvement. Sydney Stephenson[52] reports favourably upon the application of X-rays in a case of **Tuberculosis of the Conjunctiva.** Pennington[53] describes 13 cases of **Pruritus** with improvement under the influence of X-rays. William J. Morton[54] speaks favourably of X-ray treatment in **Carbuncle, Keloid, Acne, Alopecia Areata, Sycosis, Fibroid Tumour,** etc.

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# *Part II.—The Dictionary of Treatment.*

## A REVIEW OF MEDICAL AND SURGICAL PROGRESS FOR 1904.

By Many Contributors.

### GENERAL REVIEW.

General Medicine.—Medicine, like Nature, rarely "makes leaps," and hence it is difficult from year to year to point to any definite step forward, even although steady progress may continue to be made all along the line. The past year has been no exception to the rule, in that it furnishes no striking example of the triumph of science over disease.

Cancer research, and the prevention of tuberculosis, have excited less interest than last year, whilst the report of the Committee on Physical Deterioration has stimulated discussion of the causes and cure of degeneration of physique, and chronic ill-health, amongst our urban populations.

Much attention has been devoted to physical methods of treatment, and especially, perhaps, to the therapeutic scope and limitations of high-frequency currents. These subjects are dealt with elsewhere in the *Annual*.

Last year some reference was made to advances in our knowledge as regards intravenous therapeutics, and in the present volume an article will be found in which the latest opinions on this subject are summarized. The inoculation treatment of enteric fever has been the subject of much lively controversy during the year, but the time does not yet seem ripe for the formation of a final judgment upon its value.

The lines of advance in special departments of internal medicine are indicated in subsequent sections.—[R. H.]

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Lung Diseases.—Although the nasal treatment in cases of asthma has been attended by considerable success, there are still numbers of cases which are unrelieved by it or by any form of medical treatment. This has led to a re-discussion of the etiological factor. It has been shown that it is most important to use the strictest search to find the cause of the attack in each individual, with a view to its removal.

The importance of determining the nature of pleurisy (tubercular or not) from the points of view of prognosis and treatment, has led to investigations as to some reliable means of ascertaining this point.

Nothing is to be noted in the treatment, beyond the fact that the wider recognition of its frequently tubercular nature has led to "open-air" measures being advocated.

There has been a good deal of discussion on the bacteriology of pneumonia, without much definite result; the difficulty being that all the microbes found in the mouth in health, apparently can be demonstrated in the lungs of one or other case of pneumonia, and even then it is difficult to say whether such organism is a cause or a consequence. In treatment, sero-therapy has not afforded the results hoped of it. Open-air treatment has been advocated, and excessive drugging has been deprecated.

The controversy as to the unity (or not) of bovine and human tuberculosis has still been carried on. It would seem more than probable that their origin is one and the same, but that their manifestations and characteristics are modified by environment. Sanatorium treatment still holds first place, at any rate in early and suitable cases. There are, however, earnest workers in the field of sero-therapy in this connection. Much good work has also been done by medical officers in the matter of prevention.—[W. J. H.]

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In the study of Nervous and Mental Diseases perhaps the most interesting fact is the increasingly important rôle now ascribed to toxæmia as an etiological factor, whether the poison be autogenctic or introduced from without. Not only in delirium and in certain acute insanities and paralyses, such as Landry's paralysis, but also in chronic nervous and mental diseases, *e.g.*, general paralysis, tabes, alcoholism, etc., definite blood changes have been recognized and have proved of diagnostic value.

Additional experience of lumbar puncture corroborates the opinion expressed in last year's *Medical Annual* as to its value, both for purposes of diagnosis and also as a therapeutic measure.

The chief advances in neurology have been in the direction of refinement of diagnosis. In therapeutics there is little to record that is new as regards medicinal treatment. But in certain cases of chronic facial palsy, encouraging and even brilliant results have been obtained from the operation of nerve anastomosis.—[P. S.]

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Urinary Diseases.—The preponderating influence of posture in determining albuminuria in young persons, was the main outcome of the debate on functional albuminuria at the Clinical Society. Such cases do not develop into Bright's disease; they require for their treatment improvement of the general health by good food, fresh air, and exercises, with the use of such tonics as iron, arsenic, strychnine, and quinine, and the correction of constipation by mild vegetable aperients.

The surgical treatment of nephritis pursued by Edebohls is criticized from many points of view, and so far has not established itself in the confidence of the profession.

Greater freedom is now the rule in the dietetic treatment of Bright's disease, milk diet being used only in acute and sub-acute cases, or in those presenting uræmic complications; while when meat is allowed the rule is to restrict the quantity, but to allow any kind, the old objection to "red meats" being no longer maintained. The value of fish as an intermediate diet, is believed in by most experienced observers. The treatment of uræmia by lumbar puncture, to relieve intercranial pressure, has been practised with success.

The treatment of diabetes insipidus is still uncertain. Ergotine, strychnine, narcotics such as opium, and antispasmodics like belladonna, valerian, and antipyrine, are usually employed, with varying results, as the disease often gets well spontaneously. Warm baths, the constant current, and podophyllin have in some cases appeared to be beneficial. A diet poor in albuminoids and in chlorides has been recommended.

The importance of the islands of Langerhans in the pancreas in connection with the pathology of diabetes mellitus, has received additional confirmation. The tendency in dietetic treatment is to give up the use of special diabetic foods, and after maintaining strict diet for a few weeks, to determine the toleration for starchy food, and to allow those quantities of milk, potatoes, and bread which each patient can take without the return of thirst and polyuria, and upon which the body weight is maintained. Opium and alkalies are still considered the most valuable remedies.

Attention has again been drawn to malarial attacks simulating renal colic, curable by quinine.

A good deal of interest has been aroused in the methods suggested for the recognition of serious disease of the pancreas, but their value is still undecided. New methods of testing for bile pigment and for estimating the amount of uric acid in the urine have been devised, and improvements suggested in the mode of seeking for tubercle bacilli in the urine. An entirely new procedure for examining the urine by determining its hæmolytic index, has been suggested; but is too recent for any opinion to be yet expressed upon its utility.—[R. S.]

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Diseases of Children.—The feeding of infants is still the subject of much discussion, and although there is no prospect of ever attaining to final and complete knowledge of the subject, there can be no doubt that within the last few years, thanks largely to the labours of Dr. T. M. Rotch, a much more scientific investigation of the problem has taken place, and much that is practically useful has been learnt in consequence. But whilst the value of accurate methods in the

modification of milk has become appreciated widely, it has been shown at the same time that no algebraical formula will ever represent the particular modification of cow's milk which is required at a particular age; the individual infant remains an individual, and has to be studied as such. Within a recent period various writers have pointed out, that in defiance of all theory many infants thrive even at a few weeks old on undiluted cow's milk; and for infants a few months old, even undiluted top-milk, practically a weak cream, has been found successful. One of the most valuable contributions to this subject during the past year has been the method of reducing the firmness of the curd in cow's milk by the addition of sodium citrate, a method which avoids the disadvantages of peptonization, and has the great merit of being very simple. An interesting light has been thrown upon the obscure condition of œdema which often supervenes in marasmic infants; its disappearance on the addition of proteid to the food, apparently showing that deficiency of proteid in the diet is at any rate one cause of its occurrence.

In the treatment of infantile diarrhœa, some new suggestions have been made which may prove to be of value. The use of acid creamless milk gave excellent results, and the addition of gelatin to the foods was also successful. The value of stomach-washing in the vomiting of infants, although it has been known for years, has recently been emphasized by several observers, and attention has also been drawn to the good effect of nasal feeding in such cases.

A contribution of much practical interest is the description of bladder irritability in young girls from the presence of wool fibres in the bladder, these fibres having travelled up the urethra from woollen underclothing.

The treatment of chorea by rather large doses of aspirin, is a recent suggestion which seems to support Dr. Lees' contention, that large doses of sodium salicylate constitute a rational method of treating a disease which is regarded as essentially rheumatic.

The therapeutics of whooping-cough have been increased as new drugs have appeared; perhaps the most notable of the recent remedies is euquinine, and various writers have reported success with this drug during the past year. A mechanical method has also been suggested for its treatment, namely, the application of a firm binder supporting the thorax and abdomen.

In the treatment of rickets, several new preparations of phosphorus have been advocated, such as protylin, fersan, and phosphatine; but there still lingers a doubt whether phosphorus is of much value in rickets apart from the oil in which it is usually given.—[G. F. S.]

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Venereal Diseases.—Rothschild takes up a theme which has frequently been discussed, namely, the relationship between gonorrhœa and prostatic enlargement. He does not, however, throw any fresh

light on the subject of the causation of enlargement of this organ. His suggestion that prostatic enlargement may possibly diminish in frequency as a result of the energetic treatment of chronic prostatitis, is dependent upon the correctness of the view that the enlargement is an inflammatory process.

There is no very striking change in the manner or means of treatment of gonorrhœa. Organic compounds of silver, such as protargol and argyrol, which have previously been discussed in the *Medical Annual*, still receive some attention in the medical literature. Urosanol, a combination of protargol and gelatin, is recommended as an injection by Scharff. A suggestion from America that the urethra should be packed with medicated cotton cord, renewed daily, will hardly recommend itself to the profession in this country. A preparation of kava-kava resin with sandal wood oil (Gonosan) is said to be of value as an internal remedy, where local treatment cannot be adopted.

Recent experimental inoculation of syphilis in lower animals proves that a disease simulating that in man can be produced in apes. The work of Roux and Metchnikoff and of Lassar renders this undoubted. This is an important step towards the more accurate study of the pathology and bacteriology of the disease.

Several views are quoted (*Practitioner*, July, 1904) in regard to the time at which mercurial treatment should be commenced. These appear to be conflicting, but the point common to all is the view that treatment should be commenced whenever the diagnosis is certain. It is, no doubt, possible for those with a wide experience of syphilis to make a certain diagnosis, and commence treatment, before the secondary symptoms have appeared. In laying down rules in this matter it is well, however, to remember that the majority of practitioners have not the opportunity of seeing such a large number of syphilitic cases, as to leave no doubt in their minds of the diagnosis in the majority of cases, before the secondary symptoms make their appearance. It is stated that the effect of mercury is more powerful if used before the secondary rashes appear, but this is by no means generally accepted. The practitioner is therefore, to my mind, well advised in waiting a week or two to make certain of his diagnosis, before branding his patient as a syphilitic, and subjecting him to the prolonged treatment necessary for the cure of the disease. Once the treatment is commenced there is no drawing back; the patient must be considered syphilitic for all time.—[J. W. T. W.]

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Infectious Fevers.—The following matters appear to be worthy of note in the past year. The red-light treatment of small-pox, advocated with so much earnestness by the late Prof. Finsen, has not found favour in the eyes of the superintendent of the large small-pox hospital for London, at Joyce Green, near Dartford.

A new method of preparing vaccine-lymph will be found described under the head of VACCINATION. By this method, (the exposure of the lymph to chloroform vapour) the extraneous organisms are eliminated more quickly than by any other yet discovered.

An abstract of some important papers on the etiology and administrative treatment of scarlet fever, will be found under that heading.—[E. W. G.]

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TROPICAL MEDICINE.—Since the eludication by Bruce of the etiology of sleeping sickness in 1903, there has been strictly in this sphere no discovery of prime importance. The etiology of yellow fever and beri-beri still baffles investigation, and the statements made by American observers as to the protozoal nature of the former, have been shown to rest upon insufficient "control" observations. Rost's success in the cultivation of leprosy bacilli, if confirmed, is undoubtedly very important; but we are not in a position at present to form any opinion as to the truth of his statements. One cannot fail to be struck in reading through the mass of literature published on tropical subjects, by the uncritical character of many of the papers, and could wish that the editors of periodicals would exercise a more rigid surveillance in this respect.

Rogers has made an interesting observation as to the further development of the Leishman-Donovan bodies. He showed that under certain conditions they develop into a *flagellate* form, an observation which has been confirmed by others. Ross and Milne have found spirilla in cases of so-called "tick-fever," but the value of this observation is discounted by the fact that they made no observations to ascertain whether those not suffering from the fever harboured spirilla. This of course can readily be done, and if the tick (*O. moubata*) is proved to convey spirilla, we may expect some interesting light on the life-history of spirilla. (Schaudinn it will be remembered considers that a spirillum is formed by the union at their posterior ends of two minute trypanosomes).

Many investigators are working at the therapeutic treatment of sleeping sickness. Though at present no definite statements have been published, there is reason to believe that arsenic or "trypan-red" or a combination of these, will probably give a successful result. The prophylaxis of sleeping sickness is a matter of considerable difficulty in practice. A further and more complete study of the habits of tsetse flies is much required. Theoretically the matter is simple: avoid the fly; but the practical application is more difficult, though the close connection of the fly with the water of rivers or lakes indicates the principle to be adopted. Whether anything could be done to destroy the fly itself there is at present no evidence to show.

The prophylaxis of malaria is gradually making headway, and the principles to be worked upon are receiving more general recognition. They are worthy of recapitulation, though well known to those who have closely studied the question. They are: (1) Drainage. This is the fundamental process, and should only be replaced by temporary larvicidal methods, *e.g.*, petroleum, when money is not forthcoming, or when drainage is impossible; (2) Quinine prophylaxis. This is attended with considerable success in small communities, *e.g.*, a body of European colonists settled amidst a native population. Perhaps the best form in which to use it is the "gram dose" on two consecutive days every 10th and 11th day; (3) Segregation. This method, especially useful where a few Europeans have to be protected, but also capable of a much wider application, *viz.*, in the formation of distinct European and native quarters, is gradually gaining acceptance, in spite of the theoretical objections raised to it on quasi-sentimental grounds. Gratifying reports reach us from the Gold Coast and Nigeria as to the result of the establishment of separate European cantonments, and it is to be hoped that other West African colonies will give their European inhabitants some relief from the evils of infected native quarters.

We may refer here to blackwater fever, though no new work of any importance has recently been published. The position that quinine is most commonly the cause in those suffering from periodical attacks of malaria insufficiently treated, has in spite of opposition established itself, we believe, quite firmly. From time to time authors declare that they have found parasites in every case; but such statements cannot be received, as they are directly opposed to the experience of those who have examined cases with the greatest care, and found parasites only in a few. There are two points which require investigation: (1) Can quinine produce a distinct diminution in the red cells without hæmoglobinuria; (2) Is there any condition of the urine, *e.g.*, urobilinuria, albuminuria, "high colour," etc., which will indicate when a person is on the verge of blackwater fever? The blood and urine need to be carefully analysed in the pre-hæmoglobinuric stage, so that practitioners may have some guide as to when it is dangerous to administer quinine. The other determining causes of hæmoglobinuria, *e.g.*, cold, severe physical exercise, etc., if these are really causes, require more precise definition.

Finally we would draw attention to a point in the study of malaria in which progress is extremely slow. We know now some eighty anophelines. It is unsatisfactory that only in the case of eight or ten of these do we know with certainty that they convey malaria (*i.e.*, have sporozoits in their salivary glands). It is unscientific to adduce the existence of an anopheline in a locality as explaining the existence of malaria. We can only be certain of this when we have found that this anopheline actually does contain sporozoits.—[J. W. W. S.]

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General Surgery.—The past year has given birth to no great advances in general surgery. The use of spinal and local anæsthesia seems to have made no great headway in England, though the addition of adrenalin has been used (apparently without any benefit) in spinal anæsthesia. In regard to the breast, Butlin and others draw attention to the importance of chronic mastitis in the genesis of cancer; this is a most important point, and there can be no doubt that in many cases this condition of the breast is a precursor of cancer. Brophy's operation for cleft palate, though a severe one, is recommended by Mr. Owen as useful in certain difficult cases.

Many methods of disinfecting the hands and sutures have been published, but each author thinks his own method the most reliable. Rubber gloves, though somewhat expensive to use, lessen the amount of suppuration in surgical practice.

The treatment of fracture of the neck of the femur practised by Royal Whitman rests on a sound surgical and pathological basis, and should, in selected cases, give much better results than those formerly obtained. The operative treatment of simple fractures has not made any great progress, except in fractures of the patella.

The results of operation for the removal of foreign bodies impacted in the œsophagus are improving, and will doubtless further improve if surgeons operate before the walls of the œsophagus have become septic and damaged by prolonged retention of the foreign body.

Crile's researches on shock do not add much to our therapeutic resources, but are interesting, and if continued may lead to further suggestions for treatment, though in the main this will to a large extent be preventive.

The antitoxin treatment of tetanus has not been so successful as was at one time anticipated, and one writer thinks that the patient's chances are not improved by the use of antitoxin.—(P. L.)

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Obstetrics and Gynæcology.—In this department the past year has witnessed a vast amount of work, chiefly of the didactic and recording kind; much of it is important, though little of it is new.

In obstetrics we find further reports of the uses and limitations of Bossi's dilator, which has been employed a good deal in cases of eclampsia. There was a phase in which the importance of the estimation of albumin in the urine was regarded as secondary to that of urea, from the point of view of probable eclampsia. There has been a marked reversion to dependence on tests for albumin. There is still great variation in the treatment preferred. Helme has suggested a new method. The cause of adherent placenta has been elucidated by the researches of Edhem and Hense. The treatment of rupture of the uterus by packing has long had a foremost position; modern methods appear to have given surgical interference a claim to better

results, judging from Labusquière's recent investigations. We give an account of a method of treating post-partum hæmorrhage which is probably not widely known in this country; it was devised by Fritsch, who claims to have employed it with success for thirty years.

We may call attention to some important observations of Zweifel on the subject of ruptured perinæum, and to the view we express as a corollary to his remarks, that the way to secure proper treatment of ruptured perinæum, *viz.*, immediate suture, is to discountenance the pernicious teaching that rupture of the perinæum is always and necessarily the attendant's fault. The effect of this is to put a premium on the practice of "never having a ruptured perinæum" by the simple process of not looking for it.

Turning to gynæcology, we find that oöphorectomy for inoperable cancer of the breast is losing ground, though an occasional success prevents its being entirely discredited. A great deal of work has been done on fibroids, which cannot at the present day be regarded as the innocuous tumours which they have been considered to be. The little-understood conditions vaguely classed as "endometritis" have received some attention; we may refer our readers to Fothergill's review of the work of Donald, Theilhaber, and Lorenz, of which we give an abstract in the article on ENDOMETRITIS.

We have long held the view that the use of pessaries is likely to be largely restricted in the future by the adoption of radical treatment in the form of surgical procedures; several writers have recently made contributions on the subject, expressing similar views.—[A. E. G.]

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URINARY SURGERY.—A cursory glance through the abundant literature of this department of surgery during the past year, will reveal the fact that three important problems have exercised the professional mind, and engaged its best energy and skill. The first may be put in the form of the question, May it be accepted that surgery can cure acute or chronic nephritis? There is by no means unanimity of opinion among the operative section of the profession regarding the so-called cure, or even permanent relief, of the symptoms of acute or chronic Bright's disease. Some even challenge the proposition that there is any significance in the results which have been obtained by surgical intervention, in those cases which have been recorded. It must, however, be frankly admitted by those who have had any experience in this new method of treatment, that we are still in the dark when we attempt to explain the results of our operative interference; and it must with equal frankness be admitted that a most profound effect is produced upon the course of the disease and the general health.

The next moot point may be thus stated: Is excochleation of the entire prostate so slight an operation as assumed, and does it supply

the pressing needs of the ordinary "prostatic"? The editor has collated various opinions, and given them almost *in extenso*. The balance appears to accentuate the fact that the operation has some especial dangers, but the relief obtained is quite worth the moderate operative risk involved—16 per cent mortality.

The last and most important step in the progress of urinary surgery consists in the introduction of Luys' "separator" for obtaining urine directly and without difficulty from either kidney. This innovation will materially alter the mortality, and ensure the accuracy of operations upon the kidney, besides affording clinical and physiological data of the highest value.—[E. H. F.]

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The literature of Otology during the past year is noteworthy for the abundance of papers and discussions on the surgical treatment of suppuration of the middle and internal ear, and their complications. There is no doubt that a considerable advance has been made in the possibilities of more extensive and bolder surgical operations in connection with the ear. Discussions on the surgical treatment of suppuration of the labyrinth have been of great value, and lead one to believe that such operations are not so dangerous as has hitherto been supposed.

Sir William Macewen has again drawn attention to the fact that intracranial complications of otitic origin are not of a pyæmic nature occurring by metastasis, but are due to the actual extension from the primary focus of disease within the ear; and points out how very necessary it is for the mastoid operation to be performed as a preliminary step in such cases, both to remove the primary focus, and also to facilitate the tracking of the abscess.

Several observers have independently cited cases where tuberculous disease of the mastoid has resulted in general miliary tuberculosis, owing to the lateral sinus becoming directly invaded by the tubercular granulation tissue. To save such cases, surgical treatment points to the ligaturing of the internal jugular vein, and the removal of as much of the infected mastoid process and temporal bone as may be necessary. One of the most striking operations of the year in aural surgery has been performed by Richard Lake, who removed the semicircular canals in a girl who had suffered from persistent vertigo; the result so far has been successful. Such an operation opens up many possibilities in the future, but it is not wise to prophesy from a single successful case.

Attention has further been drawn to the extreme prevalence of acute otitis media in infants. There is no doubt that a neglected otitis media in infancy is responsible for many cases of deafness in after-life, if not the actual death of the infant itself from meningitis.

The treatment of non-suppurative middle-ear disease has again

been discussed in detail, but although some claim to have obtained good results in the treatment of chronic middle-ear catarrh by means of ozone or high-frequency currents, or other special methods, unfortunately the general consensus of opinion points to the fact that in sclerosis and chronic catarrh of the middle ear, too energetic local treatment will probably do harm rather than good.—[H. F. T.]

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Eye Diseases.—The importance of general vascular conditions in the causation of certain forms of ocular disease, and, on the other hand, the importance of the ophthalmoscope in the early diagnosis of some forms of general disease, is becoming more recognized from year to year. The subject finds apt illustration in two papers by Nettleship (*see* Retinitis and Choroiditis); also, from another side, in the increasing number of general diseases in which either optic neuritis or optic atrophy are found to play a part.

The most important publication of the year dealing with ophthalmology is Parsons' *Pathology of the Eye*, vol. i. Worth's book on "Squint" is the best monograph on the subject that has yet appeared. He proves that "amblyopia ex anopsia" is a reality, and by a mass of clinical illustration shows how the deviating eye of the squinting child, if taken in hand sufficiently young, can be prevented from becoming blind. It ought to prove a stimulus to those under whose care these squinting children come.

As there was some talk in the lay press recently of the power of *radium* in restoring sight to the blind, Greef has done good service by subjecting these claims to scientific tests. His conclusion is, unfortunately, that there is not a vestige of hope of any blindness being in any way influenced by radium rays.

In the sphere of operative surgery, the controversy between the advocates of the simple and those of the combined operation for cataract seems to be perennial, but there is a general consensus of opinion that the latter, the operation with iridectomy, is at any rate the safer. With regard to operations for glaucoma, we have not heard so much lately about excision of the superior cervical ganglion of the sympathetic; and the recent presentation of the Nettleship prize medal to Mr. Priestley Smith for his researches into the pathology of glaucoma will emphasize the fact that, in the opinion at any rate of the members of the Council of the Ophthalmological Society, the operation of iridectomy is not likely soon to be superseded. There have been some useful discussions on operations for conical cornea, while the surgery of the eyelids continues to afford a wide field for operative ingenuity (*see* articles on Cornea and Eyelids).

We want more light on sub-conjunctival injections. In England and America this mode of treatment has not, up to the present, been very widely adopted, and some writers who have tried it doubt its

efficacy (*see* EYE, GENERAL THERAPEUTICS OF). Yet abroad the practice is extensively adopted, and Darier, in his book on *Ocular Therapeutics*, claims surprising results from it, more especially in such diseases as central choroiditis, where other measures are so often useless.—[A. H. T.]

**ABDOMEN (Injuries of).** *A. W. Mayo Robson, F.R.C.S.*

Harris[1] records sixteen cases of penetrating wounds of the abdomen treated by immediate laparotomy, thirteen of them recovering. He maintains that this success is due to promptitude in operating, and drainage when the gastro-intestinal tract has been opened. In summarizing, he emphasises the following points :—

1. In penetrating wounds of the abdomen, there are absolutely no known symptoms which indicate injury to any of the viscera, except those in connection with the urinary tract, stomach, and occasionally the lower bowel.

2. Except those relating to general shock, all symptoms following such wounds indicate either internal hæmorrhage or peritonitis.

3. To wait for symptoms of perforation of the intestine, means to wait until peritonitis has developed; therefore,

4. Every bullet and stab wound which penetrates the abdominal cavity should be operated on at the earliest possible moment, in order to anticipate the advent of peritonitis.

5. No time should be wasted in attempting to demonstrate the presence or absence of intestinal perforation by such means as the rectal insufflation of gases or vapours, or the analysis of re-collected air or liquids intraperitoneally injected.

6. It is essential to systematically examine the entire gastro-intestinal canal in all cases, regardless of the point of entrance of the wounding body.

7. Whenever the alimentary canal has been perforated, suitable drains (the author prefers the so-called cigarette drains) should be placed either through the operative incision or counter-incision, as may appear best suited to the individual case.

Bogdonovici[2], in describing a case of double rupture of the intestine from the kick of a horse in a youth of seventeen, which he successfully sutured, points out that the only external lesion was some ecchymosis over the eighth rib, on a situation considerably removed from the site of the intestinal injury, which he maintains goes to prove that rupture is not caused by sudden compression against the vertebral column.

Claybrook[3] has found that the most constant symptom of laceration is transmission of the heart and respiratory sounds, so as to be audible over the whole abdomen, " at times even as low as the hypogastrium." He says he never found this condition present unless there was rupture of some hollow organ.

Lawford Knaggs[4] has recorded two cases of traumatic rupture of the small intestine. In both cases there was no external wound. One case recovered after laparotomy, the other died shortly after removal from the operating theatre.

Eisendrath[5] has described a case of rupture of all the abdominal muscles with insignificant injury of the skin. The patient, a man of fifty, was caught between the sides of two street cars passing in opposite directions, and severely crushed. Two ribs and the left clavicle were fractured. With the exception of several small hæmatomata over the right gluteal region, and a few ecchymoses on the right side of the abdomen, the skin was otherwise intact. There were evidences of peritoneal irritation, but the patient only consented to operation sixteen hours after the injury. On cutting through the skin a remarkable condition was found. All the muscles attached to the crest of the ilium, as well as the transversalis fascia and peritoneum, were torn from their attachments. The lower edges of the muscles were irregularly torn and contused, but the general peritoneal cavity had been partly walled off by adhesions. In the iliac fossa were many loose pieces of omentum. The ascending colon was contused and dilated, but there were no other visceral injuries. The muscles were drawn down and stitched to the tough gluteal fascia with fourteen kangaroo sutures. Primary union took place, and the patient made a slow recovery. Examination nine months after the injury showed no bulging or impulse in the area of operation.

References.—[1]*Ann. Surg.* March, 1904; [2]*Med. Press*, Sept. 30, 1903; [3]*Virginia Semi-monthly*; *Med. Press*, July, 1903; [4]*Brit. Med. Jour.* April 9, 1904; [5]*Ann. Surg.* June, 1904.

**ABDOMINAL SURGERY.** (*See* Abdominal Injuries, Appendicitis, Gall Bladder, Hernia, Intestines, Liver, Pancreas, Spleen, Stomach.)

**ACNE.** *Norman Walker, M.D.*

After mentioning methods described in last year's *Medical Annual*, Lusk[1] lays stress on the value of antiseptic stimulating and peeling applications, *e.g.* :—

| | | | |
|---|---|---|---|
| ℞ Zinci sulph. | | Spt. vini | q.s. |
| Potass. sulphurat. | | Aq. rosæ | ad. ℥iv |
| Sulph. præcip. | āā ℥i | | |

The zinc and potash are each to be dissolved in half the quantity of rose-water and then mixed, while constantly stirred; sufficient alcohol is added to the sulphur to make it into a thin paste, and then it is added to the above mixture. The lotion is sopped on twice daily, and can be used double or treble strength if necessary. If stimulation is too severe, a cold cream is applied. Ointments are not so good as lotions, but in mild cases 1 drachm of **Sulphur** in an ounce of cold cream gives good results. Pustules and abscesses must be opened,

and pure **Carbolic Acid** introduced by a toothpick. For deep-seated nodules nothing excels the following :—

| | | |
|---|---|---|
| R Potass. carbonat. Sulph. præcip. | Glycerini | āā pp. æq. |

This is very powerful, and only applicable to small areas. Internally **Mineral Acids** and **Nux Vomica** act best. Large hypertrophied areas can only be relieved by skin-grafting following excision.

Leredde[2] finds **X-rays** of undoubted value, but combines their use with other means. Torok and Shein[3] claim great benefit from repeated exposures to X-rays. The condition becomes worse at first, however, and reaction must be produced. Many other writers have published statements to the same effect.

REFERENCES.—[1]*Post. Grad.* June, 1903 ; [2]*Jour. de Prat.* April 18, 1903 ; [3]*Wien. klin. Rundsch.* Sept. 15, 1903.

**ACROMEGALY.** (*See* OSTEO-ARTHROPATHY.)

**ADDISON'S DISEASE.** *Robt. Hutchison, M.D.*

Cases are still accumulating showing the effects of the administration of **Suprarenal Extract** in this disease. Allaria and Varanini[1] administered 165 tablets (each representing 0·0005 gram of the dried gland) to a case of Addison's disease in the course of twenty days. The results were entirely negative. On the other hand, Deeks[2] reports the case of a patient who came into hospital with Addison's disease of five months' standing. All the symptoms were well marked. There was extreme weakness, universal pigmentation, a rapid feeble pulse, and severe diarrhœa and vomiting. She was treated for a month with various drugs without avail. She was then given 3 grains of suprarenal extract three times a day. In three days the vomiting and diarrhœa had abated, and in a fortnight the patient was feeling comfortable, and enjoying her meals. In a month the pigmentation was fast disappearing, and she left the hospital feeling well. Progress has continued since.

REFERENCES.—[1]*Clinica Medica*, No. 1, 1902 (Abst. in *Brit. Med. Jour.* Nov. 29, 1902) ; [2]*Montr. Med. Jour.* July, 1902.

**ADENOIDS.** *P. Watson Williams, M.D.*

Adenoid vegetations may arise in infancy, but Dun[1] has rightly, we think, pointed out that in the very large majority of cases the symptoms are slight, and do not materially affect health and development. But in a comparatively few he has found definite and severe symptoms, usually those of nasal obstruction and catarrh, and occasionally reflex nervous phenomena, or even septic processes. Thus he reports instances in infants, of convulsions, laryngeal stridor, and reflex vomiting tetany, and paroxysmal cough, cured by the removal of adenoids.

That cases of adenoid vegetations do sometimes occur even in

the very young, is undoubted; but while recording the observations of Dun, we feel it desirable to state that the occasional sequence of relief from nervous reflex phenomena in infants after adenoid operations, does not convince us of the causal relationship between the adenoids and the nervous phenomena. In the first place, every child is born with a naso-pharyngeal tonsil; and we are strongly of opinion that the removal of the normal "mass" of lymphoid tissue is sometimes regarded as "evidence" that the diagnosis of adenoids was justified. Secondly, infants are not prone to reflex neuroses, and there is a remarkable absence of evidence that convulsions, laryngeal stridor, or reflex vomiting, are associated with an existence, in marked degree, of adenoids in children of the age when reflex nerve symptoms are not unusual.

REFERENCE.—[1] *Brit. Med. Jour.* Sept. 12, 1904.

**ADIPOSIS DOLOROSA. (Dercum's Disease).** *Robt. Hutchison, M.D.*

Marcou[1] describes a case of this rare disease, with a view to establishing more clearly the different clinical types. The patient, an unmarried woman, aged sixty-eight, was well educated, and for thirty years was head mistress of a *lycée*. Her mother committed suicide at the age of forty-six. The patient presented marked hysterical symptoms through life, such as functional paraplegia, pseudo-anginal attacks, and apoplectiform seizures. She dated the commencement of the disease from a fall during a seizure at the age of fifty-seven. Pain in the lumbar region on walking followed, and a rapid development of fat ensued. Later, pains round the pelvis and down the thighs became constant, with severe exacerbations upon movement. Nine years after the commencement of the disease, she entered the clinic of Elena Pawlowna under the care of Motchoutowsky, who at that time regarded the case as one of generalized atrophic myositis. A year later, however, the nature of the disease was manifest. The head and neck were thin; the breasts and abdomen were enormous. Fatty tumours were suspended from the arms, and small lipomata covered the forearms as far as the wrists; the hands were thin. The legs formed two perfectly cylindrical columns, and presented a marked contrast with the arms on account of all absence of lobulation. The dorsum of the foot was enlarged. The external genitals were normal. Pain was limited to the shoulders and hips, and was increased by the least movement. The various forms of sensation were intact. Electrical reactions showed a marked muscular atrophy without reaction of degeneration. Feeble contractions were obtained in the muscles of the upper limb, but strong galvanic or faradic currents failed to provoke any contractions in the lower. Marcou suggests that this absence of motor response was due to the increased resistance to the current either (1) by the increase of fat, or (2) by the dryness of the skin. The viscera were normal, and the mental condition was in no

way impaired. **Morphine** alone controlled the pain, given in doses of 1 cgram. subcutaneously once a week. Cases are also described by Chevers[2] and by Hammond[3].

REFERENCES.—[1]*Arch. Gén. de Méd.* July 14, 1903, *Brit. Med. Jour.* Aug. 8, 1903 ; [2]*Brit. Med. Jour.* April 2, 1904 ; [3]*Ibid.* July 16 1904.

**ALBUMINURIA** Functional).

*Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

Although the debate at the Clinical Society[1] on functional albuminuria did not elicit anything new, it showed that the majority of the speakers accept the view that posture is the most important factor in the determination of most cases of albuminuria in young persons, and that this does not indicate incipient renal disease. Although he was unable to take part in the discussion, Sir William Broadbent also, in an interesting letter[2], affirmed his belief in the primary importance of posture. In addition to this he thought there was very often a neurotic family history. He believes that these cases never develop into renal disease. He drew attention to the characteristic low-tension pulse, with epigastric pulsation and reduplication of the second sound of the heart when the patient is lying down. The treatment required is good, simple **Food, Fresh Air**, and **Vigorous Exercise.** School games should not be forbidden, except house-runs and long paper-chases. Such tonics as **Iron, Arsenic, Strychnine,** and **Quinine** are useful in many cases. Constipation should be corrected by **Aperients** of the tonic class, such as aloes. He gives the useful hint that on the morning after a mild pill (hydrarg. c. colocynth. et hyoscyamo) the albumin may be absent even when habitually abundant. This should be borne in mind when a candidate for one of the public services has to undergo a medical examination.

It has occasionally been noticed that strongly albuminous urine, when boiled and acidulated, becomes gelatinous, so that the tube can be inverted without spilling its contents. Chas. Murray[3], of Aberdeen, explains this as being due to the large amount of acid albumin formed. He also points out that acid albumin may coagulate on heating in certain strengths of mineral acid. The exact percentage of acid cannot be definitely stated, as it varies with the time and the temperature. With faint acidulation there is coagulation : with more acid no coagulation : with more again coagulation ; and with still more the result is uncertain, coagulation may or may not occur. In performing the heat coagulation test, he thinks weak acetic acid is preferable to acidulation with nitric acid, as the danger of forming acid albumin is reduced to a minimum. With regard to the supposed danger of mistaking urinary mucin for albumin when testing by acidulation and heat, he remarks that a clear sample of urine which is decidedly acid in reaction, can contain little mucin in solution. It is in neutral or alkaline urine, where a very appreciable amount

of mucin may be dissolved, that a risk of confusion occurs. He thinks in such cases it is best to precipitate it first by mixing equal quantities of urine and 5 per cent acetic acid before the urine is heated. He thinks the continued use of nitric acid is merely due to the force of habit, and has nothing to recommend it. He uses the salicyl-sulphonic acid test, which is safe, convenient, and delicate. It is performed by adding a few drops of saturated aqueous solution of the acid to a small quantity of urine, 20 or 30 drops, in a very small test-tube. If no precipitate occurs there is no proteid present, but if there is a precipitate the tube is boiled to distinguish albumin, which does not clear up on heating, but becomes coagulated and flaky. In the absence of precipitation it is not necessary to boil. The reagent is exceedingly stable, and does not stain or corrode, although it precipitates albumose or peptone; these are dissolved on heating.

Jatrona[4] recommends the use of ordinary formalin solution (40 per cent) for detecting albumin in the urine. He says it precipitates serum-albumin and serum-globulin, but does not affect solutions of egg-albumen, except by rendering them cloudy. If 2 cc. of formalin are added to 5 or 6 cc. of urine, the albumin and globulin are precipitated in flocculi. This solution may be used instead of that of Esbach, in the albuminometer.

References.—[1]*Lancet*, Dec. 19, 1903; [2]*Brit. Med. Jour.* Jan. 2, 1904; [3]*Ibid*, April 16, 1904; [4]*Gaz. deg. Osped.* Sept. 13, 1903.

**ALCOHOLISM.** *Purves Stewart, M.A., M.D.*

Sullivan[1] has endeavoured to classify cases of alcoholic intemperance into two great divisions, *viz.*, "convivial" and "industrial" drinking. According to this definition, convivial or luxury drinking goes with social conditions of relative luxury, is generally intermittent, and produces simple drunkenness. Industrial or misery drinking, on the other hand, is a much more serious affair, which goes with bad hygienic conditions, insufficient or unattractive food, overcrowding, overwork, etc. The drinking goes on during working hours, and is more or less in substitution of food. It is this form which causes the chronic alcoholism that results in crime, insanity, suicide, and racial degeneration. Convivial drunkenness is common in prosperous districts; industrial drinking, alcoholic insanity, and crime, in manufacturing towns, and still more in seaports, where industrial conditions are at their worst. Convivial drinking is a lesser social evil and is more easily checked than industrial drinking.

Such a classification, though suggestive, does not cover the ground, since, as Yellowlees points out, there are large numbers of drunkards who need neither the excuse of conviviality nor of misery, but who drink simply because they like to do so.

Reference.—[1]*Lancet*, May 28, 1904.

**ALEPPO BUTTON.** (*See* Leishman's Bodies.)

**ALOPECIA AREATA.** *Norman Walker, M.D.*

Dillingham[1] gives the place of honour to **Chrysarobin,** which yields him his best results. Used in a strength of 15 grs. to the ounce of vaselin, it should not be applied to the face or over too large a surface. In his own words, "We aim to produce a mild dermatitis in order to obtain the benefit of the emigration of the white blood corpuscles and destruction of the organisms." The ointment should be used thoroughly every night for a week, and then stopped to see if the disease is still progressing. Afterwards the case is completed by the employment of massage and stimulating liniments.

Hutchinson[2] narrates the case of a middle-aged man with alopecia areata of the left half of one moustache, lasting for two months. Its deviation from bilateral symmetry, and its mode of spread by an aggressive border, were evidence of a purely local affection, and as a history of ringworm affecting the nape of the neck in boyhood was subsequently elicited, this completed what Hutchinson calls the "chain of evidence" connecting the two conditions.

Jacquet[3], with the view of disproving the parasitic theory of alopecia areata, tried to inoculate six patients, making altogether 100 inoculations. The supposed contagious products were rubbed vigorously in, and an electrolysis needle carefully charged with material was passed down the hair follicles. In spite of the assistance of M. Sabouraud, all the efforts were in vain.

REFERENCES.—[1]*St. Louis Med. and Surg. Jour.* Sept. 1904; [2]*Polycl.* March 12, 1904; [3]*Presse Méd.* Dec. 12, 1903.

**AMBLYOPIA (Toxic).** *A. Hugh Thompson, M.D.*

Drs. Schweinitz and Edsall[1] have submitted a series of patients suffering from tobacco-alcohol amblyopia to minute examination of their gastric contents after a test meal, and also of their urine, and conclude that in many of these cases there is a marked disturbance of digestion or metabolism, or both, the most notable changes in the urine being the presence of indican and urobilin. Furthermore, this disturbance may persist for a long time after the use of alcohol or tobacco has been stopped. In one case, at any rate, there was good evidence that it was the treatment of this secondary nutritive disturbance which did most to cause improvement in a persistent amblyopia. These facts, they say, give just ground for the belief that toxic substances produced in the digestive tract, or in the course of metabolic processes, have at least a certain part in the production of the amblyopia in most cases; and are probably often the direct cause of the continuance of the symptoms when the latter do not disappear after the alcohol and tobacco have been stopped.

Buller[2] relates three cases of acute toxic amblyopia caused by *methyl alcohol.* The three cases were observed within eighteen months, so that the affection is probably not very uncommon. Rapid failure of sight, often becoming complete, the condition then improving but

soon relapsing, is the most characteristic symptom. Contracted visual fields occur along with central scotoma, either relative or absolute. Ophthalmoscopic signs are variable. In mild cases there may be complete recovery. The poison had usually been taken by mistake, either for medicine, or for ordinary alcoholic spirit. "Knowing, as we do, that not very large doses may have a fatal effect, this substance might, if labelled 'poison,' be used too conveniently by persons possessed of suicidal tendencies; probably, therefore, a label stating that 'this liquid taken internally is likely to cause blindness' might have a sufficiently deterrent effect."

Of other rare causes of toxic amblyopia, two fresh instances are given[3] of complete (or almost complete) and permanent blindness, from the administration of *filix mas* extract as a remedy for intestinal worms. "A point of practical importance is that the active principle of filix is readily soluble in oil, and therefore it may be well to depart from a common custom, and rather avoid the administration of castor oil along with or after the extract, and preferably to use calomel or some other non-oleaginous purgative." Three other instances of amblyopia, mostly temporary, are given from poisoning by *chlorate of potash*; *oil of wintergreen* taken internally for gonorrhœa; and a remarkable case in which a boy of eight was found to be in the habit of drinking from six to eight cups of strong *black coffee* daily, and in which his vision became normal a month after leaving off the habit.

References.—[1]*Amer. Jour. Med. Sci.* Aug. 1903; [2]*Montr. Med. Jour.* Jan. 1904; [3]*Ophth. Rev.* Sept. 1903.

**AMPUTATIONS.** *Priestley Leech, M.D., F.R.C.S.*

*Precarpal Operation.*—Morestin[1] describes a method of amputation which on rare occasions may give better results than exarticulation at the wrist-joint. The method consists in removal of the metacarpus, and of the thumb and fingers, but, in place of a long and tedious disarticulation of metacarpal from carpal bones, the proximal ends of the metacarpals are sawn through and left attached to the carpal bones. The stump thus formed should be of good use provided it be covered with sound integument, and the wrist and the intercarpal joints are free from adhesions. The superior advantage of this stump over that of disarticulation at the wrist is entirely dependent on the absence of articular adhesions, and on uninterrupted continuity of the tendons attached to the retained bases of the metacarpal bones.

Reference.—[1]*Rev. d. Orthop.* No. 2, 1902; *Brit. Med. Jour.* April 19, 1902.

**ANÆMIA.** *Prof. A. H. Carter, M.D., F.R.C.P.*

*Anæmias of Infancy.*—Riviere[1] has studied this subject, and has arrived at the following conclusions:—

1. That anæmia in infancy from any cause, if severe enough, gives rise to the peculiar symptoms grouped under the headings "anæmia splenica infantum" and "anæmia splenica pseudo-leukæmica" of von Jaksch.

2. That, consequently, these are not specific blood diseases, but owe their peculiarities merely to the "infancy factor," and that they represent merely different stages of the same condition.

3. That the common cause of severe anæmia in infants is gastro-intestinal catarrh, leading to the absorption of toxins either from the growth of micro-organisms, or possibly from the formation of poisonous by-products of digestion.

4. That leukæmia of infants is not a separate disease, but merely a still more advanced stage of this anæmia—that is, that the difference between them is one of degree and not of kind.

5. That leukæmia of adults is a return to the condition of an infantile anæmia, and that, being rare, its causation is probably so narrowed down as to be practically specific.

Anyone wishing to acquaint himself with the general question of infantile anæmia, brought up to date, would do well to read four lectures on the subject by Cautley[2].

REFERENCES.—[1]*Lancet*, Nov. 1, 1903; [2]*Clin. Jour.* March 16 to April 6, 1904.

**ANÆMIA, (Pernicious).** *Prof. A. H. Carter, M.D., F.R.C.P.*

It is well known that grave cases of anæmia may occur as the result of severe or prolonged hæmorrhage, pregnancy, intestinal parasites, or cancer, which exhibit clinical features closely resembling those of pernicious anæmia. Is it possible to distinguish the latter from such cases by careful histological examination of the blood? Houston[1] claims that it is. The points which he regards as specially characteristic are the high colour-index (always above unity), a megaloblastic type of blood, and usually a percentage increase of leucocytes. In a long series of 150 cases under his own observation, he shows that secondary anæmia, however severe, does not exhibit these features; and that in the very rare instances in which it is otherwise, the anomaly may be explained by the implication of the bone-marrow—either directly or indirectly—by the primary disease. He reports a case of malignant disease with secondary deposits in the bone marrow, which supports this view.

Reuling[2] reports three cases of pernicious anæmia with pathological changes in the spinal cord. In two, the lesion was columnar in distribution, involving the posterior columns of the cord; while in the third, it was distributed in patches, evidently as the result of local hæmorrhages.

REFERENCES.—[1]*Brit. Med. Jour.* Nov. 14, 1903; [2]*Amer. Jour. Med. Sci.* March, 1904.

**ANÆSTHESIA.** *R. J. Probyn-Williams, M.D.*

**Chloroform.**—In the Third Report of the Chloroform Committee of the British Medical Association,[1] Professor Sherrington and Miss Sowton give the results of experiments in perfusing an isolated mammalian heart with chloroform contained in various solutions, such as blood diluted with 25 per cent or less of physiological saline

solution, blood more freely diluted, blood serum. Locke's solution—that is, a saline solution containing 0·1 per cent of dextrose—and other liquids. They find that chloroform when administered in a physiological solution such as Locke's, depresses the heart-beat much more powerfully than when administered in blood in the same percentage strength. The effect of chloroform from 0·05 per cent up to 0·1 per cent in blood, is to depress the heart-beat only equivalently to chloroform solutions about twelve times less concentrated in physiological saline solution. Two possible explanations are offered for this remarkable fact: (1) That physiological saline solutions probably favour the heart's activity less than blood; and (2) That in equal quantities of chloroform dissolved in the two fluids, the tension is greater in the saline solution than in the blood. It was also demonstrated that the heart can be permanently affected by a much lower percentage of chloroform when dissolved in saline solution than would be the case if it were administered in blood.

In the same report Vernon Harcourt gives the results of further experiments with his chloroform inhaler (*Fig.* 5). The bottle is now made in a conical shape, so that as the depth of the chloroform is lessened by evaporation the superficial area is increased, and so the patient will practically always receive the same proportion of chloroform vapour, whether there is much or little of the fluid in the bottle. He also shows by experiment that the actual quantity of chloroform inhaled by the patient is not altered to any great extent by variations in the depth and rate of the breathing.

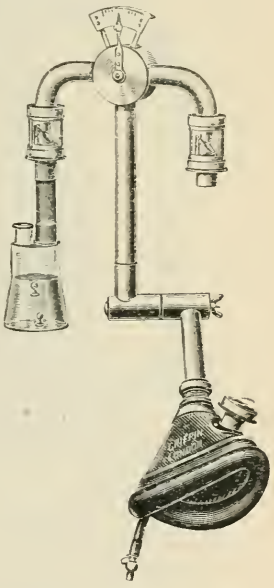

*Fig.* 5
Vernon Harcourt's Inhaler.

In the last section of the report, Byles, Harcourt, and Horsley deal with the estimation of the chloroform dissolved in the blood. They find that though as much as 95 per cent to 100 per cent of chloroform could be recovered from water in which it is dissolved, far less could be extracted from a solution in blood, even when heat was employed, in some cases as much as 20 per cent of chloroform being retained. It was further found that the corpuscular portion of the blood retains chloroform, but that to do so it is essential that the morphological integrity of the corpuscles be maintained. The amounts of chloroform in the blood during different periods of anæsthesia were estimated; and in the one experiment it was proved that the "fatal dose was

not twice the amount required to produce unconsciousness to pain." This, the report points out, is exactly the result obtained by Snow in his less precise experiments fifty years ago.

Tunnicliffe and Rosenheim[2] give their results of the action of **Chloroform, Ether Alcohol,** and **Acetone** on the excised mammalian

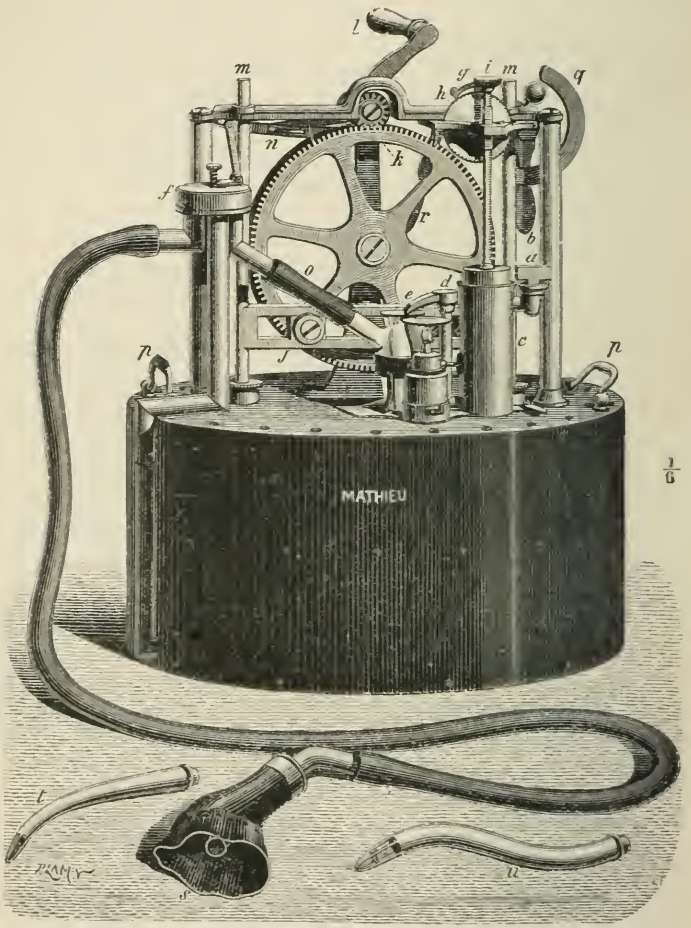


*Fig. 6.*—Dubois' Chloroform Apparatus.

heart. Chloroform in as minute a proportion as 1–25,000 of nutrient fluid was found to cause slowing of the heart, but it could be recovered by the perfusion of nutrient fluid free from chloroform. Stronger solutions had a more marked effect; and 1–1000 stopped the heart in diastole, but it could be recovered as before. The effect of

ether in slowing the heart was slight, and it could not be stopped by a solution of 1–500. Alcohol and acetone in solutions of 1–500 also produced some slowing and irregularity. The practical identity between the quantities of chloroform shown by the authors to seriously affect the living heart, and those found by Pohl in the blood of animals fully narcotized by this substance, is pointed out. Franz found ether in the proportion of 1–2000 in the blood of animals fully under its influence, which proportion the authors show cannot affect the heart seriously. It is suggested that this method of perfusion should be adopted for the detection of physiological impurities in chloroform.

The action of chloroform on the heart and blood-vessels has also been investigated by Schäfer and Scharlieb[2]. Chloroform was given to dogs, both by inhalation, and by injection into the blood-vessels in a solution with normal saline. It was found to depress the heart, and eventually stop it, quite independently of its action on the respiratory centre. The writers insist on the specific action of the drug on the cardiac muscle. They could not observe any dilatation of the arterioles from the action of the chloroform; and consider that the fall in blood-pressure is wholly due to the depressing action of the drug on the heart.

Chapman[3] gives the results of the administration of chloroform vapour to five patients by means of Dubois' apparatus. A regulated number of drops of liquid chloroform are mixed with four litres of air, which is then passed on to a face-piece, so that the chloroform is obtained by pumping, and not by any effort of suction on the part of the patient. By regulating the number of drops, the percentage of chloroform vapour in the mixture delivered to the patient can be altered at will; but 2 per cent was found sufficient to produce anæsthesia in these cases, and then it was maintained with a lower proportion. The necessity of employing one hand to turn the handle of the apparatus was felt to be a drawback, and Chapman suggests that this should be done with a small motor, or foot-treadle. (*Fig.* 6.)

A **Discussion on Chloroform Anæsthesia** was held at the annual meeting of the British Medical Association.[4] It was opened by Horsley, who described the work of the Chloroform Committee of the Association, which has been reported above and in the *Annual* for last year.

Moore and Roaf described experiments upon the formation of easily dissociable compounds or aggregates between chloroform and the proteids of the blood and tissues. The results tended to show that "the production of anæsthesia is due to such aggregations, and the activity of the protoplasm is thereby limited. The combinations only exist so long as an adequate pressure or concentration of the anæsthetic in solution is maintained; as soon as the pressure falls, the compound or aggregate dissociates, and the cell becomes free to take up once more its normal activities."

Edie had investigated the precipitates produced by chloroform in solutions of hæmoglobin and serum. His results seemed to show that the compound formed between chloroform and proteid had a constant proportion of chloroform ; and the same was true in the case of serum, which however, had not been studied in such detail.

Waller agreed that ordinary anæsthesia of the human subject required the continuous exhibition of chloroform and air at 1 to 2 per cent dilution, though the upper limit might exceptionally be raised to 3 per cent. But he did not regard the Vernon Harcourt inhaler as the best possible form of apparatus, as it was based upon the principle that the supply of anæsthetic is dependent on the inspirations of the patient. His objections were (1) That with failing respiration there is a rising percentage of chloroform ; (2) That continuity of anæsthesia requires very perfect closure of the mask ; and (3) That shaking of the chloroform bottle raises the percentage to such an extent as to render the instrument-maker's scale altogether illusory. He preferred the Dubois apparatus, in which a known percentage of chloroform and air is delivered to an open face-piece, from which the patient inspires continuously.

Dudley Buxton dealt with the clinical aspect of the recent researches on chloroform, especially on the proof that anæsthesia can in most cases be maintained by so small a proportion of chloroform as from 1 to 2 per cent. He considered that such deaths as those which had been reported by Guthrie and several Continental observers could not occur if the anæsthetic were given in these dilute proportions. He considered Vernon Harcourt's inhaler as the most satisfactory apparatus for obtaining this definite, low proportion of chloroform. McCardie gave the results of his work with Harcourt's inhaler. He had found it specially suitable for continuing anæsthesia which had been induced by nitrous oxide or ethyl chloride, followed by ether for five minutes. He considered the great advantages of the method to be (1) The quiet and regular induction ; (2) The comparative lightness and yet efficiency of the anæsthesia ; (3) The perfect control over narcosis ; (4) The comparatively quick recovery and small after-effect.

Chapman and Duigan reported the result of their work with Dubois' apparatus in 45 unselected cases. The average time taken to produce anæsthesia was eight minutes, and this was obtained by starting with 1·2 per cent and passing rapidly to 1·6 per cent, or 2 per cent. Anæsthesia can be maintained with the proportion reduced to 1·6 or 1·2 per cent.

Dudley Buxton[5], in a paper read before the British Gynæcological Society, gave in detail some of his experiences in the use of the Vernon Harcourt inhaler. He has now used it in some hundreds of cases, including severe abdominal operations, such as resections of the stomach, gastro-enterostomy, cholecystectomy, etc., also in many operations on the brain, for the removal of goitres, etc. To obtain

anæsthesia he uses the inhaler with the indicator at 2 per cent but finds that in many cases the anæsthesia may be maintained with 1 per cent or even 0·5 per cent. Only once has he found it necessary to supplement the inhaler, and give a stronger dose of chloroform; and that was to overcome rigidity for a minute at the critical stage of an operation on the gall-bladder. He has found the inhaler very useful in the case of patients who were unsatisfactory subjects for the administration of any anæsthetic. In none of the cases has artificial respiration, tongue-traction, or any other measure been necessary, and on recovery vomiting has often been absent, and generally less severe than after other methods of administration.

*Delayed Chloroform Poisoning.*—Stiles and Macdonald[6] report two cases of death following an operation under chloroform, which are similar to those reported by Guthrie (*Medical Annual*, 1904, p. 128). One child died three days after an operation for the radical cure of a hernia, and the other twenty-six hours after osteotomy for knock-knee. It was considered that these deaths could not have been due to carbolic acid poisoning, or to fat embolism, and also that they could not be attributed to sepsis; though it was demonstrated by means of lantern slides and microscopical specimens taken from a case that had obviously died of sepsis, that the change found in the liver, kidneys and heart very closely resembled those which are said to be characteristic of delayed chloroform poisoning.

Foerster[7] describes two similar cases to the above. In both of them the liver was found to be large and fatty, and there was fatty degeneration in the tubules of both kidneys, but the glomeruli were not affected. As in both these cases the organs had previously been found to be healthy, Foerster believes that death was due to the chloroform administered.

**Ethyl Chloride** has been extensively used during the past year, and many forms of apparatus have been devised for its administration. Hatch[8] writes that he has used ethyl chloride in 3000 dental operations, and considers it the best routine anæsthetic for the purpose. He uses an inhaler designed by himself, and continues the administration till the corneal reflex is abolished. He finds that it is specially suitable for children, and prefers the simple drug to the mixture with ethyl bromide known as "somnoform." In a communication to the same journal of the preceding month, he advises for adults a position as nearly upright as possible, on account of the trouble that may arise from the falling back of the tongue, while he uses the recumbent position for children.

Ware[9] uses "Kelene" and a special mask of his own. He has used this drug in 1000 cases, and found the anæsthesia satisfactory in 95 per cent of them. In six cases dangerous symptoms were observed, and these were always due to interference with respiration. He has used it for operations for the relief of empyema, and retro-pharyngeal

abscess with difficult respiration, and has found it act well. He has given it for fifty minutes to an infant of eight months for an operation on strangulated hernia, to a woman of seventy-five for forty-five minutes for an operation on the hand, and to a woman of eighty for the reduction of an old dislocation of the shoulder.

Luke[10] gives the results of 300 administrations of pure ethyl chloride, given in an inhaler of his own designing, and comes to the conclusion that it is as safe as ether, and especially suitable for children, and old or anæmic patients, and that it is particularly useful for short operations. He has obtained as long an anæsthesia as seven minutes from the inhalation of a single dose of 7 cc. He found that when given between 10 and 12 o'clock in the morning for short dental operations, one in twenty of his patients were sick, but that sickness was more common in the afternoon. He gave ethyl chloride to a patient suffering from pneumonia, for an incision in the arm, with good results. Luke considers that great care is required in the administration, on account of the very sudden onset of anæsthesia.

Chaldecott[11] has used the drug in 500 cases, giving it from an Ormsby's inhaler made rather deeper than usual, so that the sponge is not too near the face of the patient. He finds it most satisfactory for the removal of tonsils and adenoids, and points out that when an anæsthesia of more than about 40 seconds is desired for this operation, the child should be placed in the recumbent position, and the back of the mouth kept free from blood, on account of the great danger of its entrance into the larynx. Chaldecott thinks it worthy of trial in many minor operations.

Lotheissen[12] has collected the reports of cases of death attributed to ethyl chloride, and McCardie[13] in discussing this paper, agrees that up to April, 1902, there was only one death recorded in 17,000 cases, which ought to be attributed to the action of ethyl chloride as an anæsthetic. Of course, since the publication of this paper the number of administrations has been enormously increased, but there have not been many cases of death after its use reported in the journals. One such case occurred[14] during the extraction of teeth. A woman of forty was anæsthetized for the removal of many teeth, and when seven had been extracted in about thirty seconds the breathing was found to be "shallow," and soon stopped, though the pulse could still be felt. All attempts with artificial respiration, etc. failed to recover the patient. A *post-mortem* examination revealed nothing abnormal beyond "large accumulations of fat on the surface of the heart and most of the intestinal organs." Though the case was reported at the time as one of death under ethyl chloride, Moritz[15] states that the anæsthetic was not pure ethyl chloride, but was **Somnoform.** Rumours of other deaths have been heard, but no other has been published in this country during the year. Another death from **Somnoform** was reported[16], in which a woman of forty-two, who had previously taken nitrous oxide

well, was given somnoform for the extraction of teeth, but before the operation was begun "pallor and shallow breathing were noticed," and all efforts to revive her failed.

**Massage of the Heart.**—Kemp and Gardner[17] give the results of their experiments on massage of the heart to restore the circulation in chloroform poisoning. The chest of a dog which had been killed by chloroform was opened 2 min. 42 sec. after the heart had been felt to stop beating. When the chest was opened no movement of the heart could be detected. Manual compression of the heart was begun 4 min. 24 sec. after manometer tracings had stopped. The first faint resistant throb was felt in 2 min. 46 sec. after the compression was begun, and in 3 min. 28 sec. the heart beat of itself, and continued to do so till the animal died twenty-four hours after through its tearing out the stitches and opening up the wound in the thorax. In this paper the authors recommend the use of an air-pump which has been designed for the performance of artificial respiration, or rather artificial inflation of the lungs, and a curved glass tube for intubation of the larynx.

Sick[18] reports a case of massage of the heart in a patient of fifteen, during an operation for tubercular peritonitis. The chest was opened and the heart exposed, and direct compression applied for fifteen minutes. The patient recovered consciousness, but died twenty-four hours later.

Bourcart[19], after experiments on dogs, concludes that in accidents from chloroform **Massage of the Heart through the Diaphragm** will often restore the patient to life. Artificial respiration should be continued at the same time, and this method is less dangerous than the opening of the thorax to perform direct compression.

McCardie[7], in quoting the above article, suggests that contractions of the heart might be started by the injection of adrenalin directly through the diaphragm into the heart cavity, but Crile[20] found that this caused fibrillar contractions, after which the heart could not be resuscitated. By means of rhythmic cardiac pressure, either through the thorax, by pressure on the ribs over the heart, or by direct pressure within the thorax, combined with artificial respiration and infusion of adrenalin, he had revived animals which had been apparently dead for fifteen minutes. Cohen[21] and others have also reported successful cases of massage of the heart.

*Preparation of the Patient.*—McCardie[22] gives a long account of an interesting paper by Witzel[23] on the most recent German methods of preparing and anæsthetizing a patient, and also of his after-treatment. Three important points are noted :—

1. Disinfection of the mouth and air-passages before narcosis.

2. The special posture of the patient on the operating table. The mouth must always be on a lower level than the larynx, so that it is impossible for any fluid to be sucked back into the chest. To maintain the head in this position an assistant is necessary.

3. Ventilation of the air-passages by systematic breathing movements after the operation.

The routine anæsthetic used by Witzel is **Ether** dropped on to a mask, with a preliminary hypodermic injection of **Morphia.** Whenever practicable the patients are made to get up as soon as possible after the operation; for instance, after an amputation of the upper arm, and after a gastrostomy, both patients were sitting up the same evening.

In order to prevent the inhalation of blood during operations in the mouth, etc., Crile[24] recommends that the patient should first be reduced to full surgical anæsthesia, the pharynx cocainized, and two drainage tubes as large as possible passed through the nares to the level of the epiglottis; the tubes should then be severed at an equal distance from the nose. The mouth should then be well opened, the tongue drawn out, and the entire pharynx packed with rather large pieces of gauze. If this is done thoroughly the base of the tongue is carried well forward, and an air-chamber, with which the rubber tubes and the larynx communicate, is thereby formed.

For the prevention of shock Crile[20] suggests the use of a **Pneumatic Suit** made of india-rubber, and blown up by a bicycle pump. By this means uniform pressure can be applied over the limbs or abdomen, and by the use of air-valves the pressure can be so varied that the blood-pressure can be altered at will from 25 to 75 mm. of mercury. In operations on the head and neck where shock was expected, the suit has been put on before the operation was begun. In the case of one patient who was almost pulseless, the blood-pressure was raised to 110 mm.

Robertson[25] advises the use of a hypodermic injection of $\frac{1}{100}$ of a grain of **Hydrobromate of Hyoscine** as a routine measure before ether inhalation. The author has used it in 57 cases, 14 of these being abdominal sections, and finds that the secretion of mucus is much diminished, and that there is less vomiting and coughing after the operation. The injection is given half an hour before the administration of the ether, and is also said to act as a sedative, and to enable the patient to take the ether without any excitement.

Bellamy Gardner[14] gives the result of some observations on the effect of the atmospheric pressure on the length of the anæsthesia resulting from the administration of nitrous oxide, either alone, or combined with oxygen. His conclusions agree with the results of Paul Bert's experiments, that with a higher barometric pressure greater tranquility and longer anæsthesia can be obtained with nitrous oxide, and that more oxygen or air may be admitted without causing excitement.

*Tooth in the Trachea.*—A case is reported[26] in which it became necessary, during the performance of an abdominal operation, to open the mouth on account of cessation of respiration. A wooden spatula was used, and though something was heard to snap, no broken tooth was found. In a few days the patient discovered that she had lost a

tooth, and declared that she felt it in her throat, and later said that it had stuck in her chest. On the nineteenth day it was expelled during a paroxysm of coughing.

*Artificial Respiration.*—Schäfer[27], in a paper read before the Medico-Chirurgical Society, suggests a new method of performing artificial respiration, which was intended originally for the restoration of the apparently drowned. "It consists in laying the subject in the prone posture, preferably on the ground, with a thick folded garment underneath the chest and epigastrium. The operator puts himself in a position athwart or at the side of the subject, facing his head and kneeling upon one or both knees, and places his hands on each side over the lower part of the back (lowest ribs). He then slowly throws the weight of his body forward to bear upon his own arms, and thus presses upon the thorax of the subject and forces air out of the lungs. This being effected, he gradually relaxes the pressure by bringing his own body up again to a more erect position, but without moving the hands: as he does this, air is drawn, by the removal of pressure from the chest walls and by their elastic reaction, into the lungs. This process is repeated quite regularly, and without manifest intervals between the movements, not less often than twelve times a minute: it may be done somewhat more rapidly, but fifteen times a minute would, in any case, be sufficient."

Schäfer[28] has shown experimentally that by this means a greater exchange of air can be effected than by the methods of artificial respiration usually employed: but in the discussion[28] which followed the paper his method was much criticized.

REFERENCES.—[1]*Brit. Med. Jour.* July 23, 1904; [2]*Jour. of Phys.* April 28, 1903; [3]*Lancet*, Jan. 16, 1904; [4]*Brit. Med. Jour.* Sept. 24, 1904; [5]*Med. Press*, March 23, 1904; [6]*Brit. Jour. Child. Dis.* June, 1904; [7]*Treatment*, Feb. 1904; [8]*Brit. Dent. Jour.* Oct. 1903; [9]*Jour. Amer. Med. Assoc.* Nov. 8, 1902; [10]*Edin. Med. Jour.* Nov. 1903; [11]*Brit. Jour. Child. Dis.* Feb. 1904; [12]*Centr. f. Chir.* No. 20, 1903; [13]*Treatment*, Jan. 1904; [14]*Brit. Jour. Dent. Sci.* April, 1904; [15]*Ibid*, May. 2, 1904; [16]*Ibid*, June 1, 1904; [17]*New York Med. Jour.* May 14, 1904; [18]*Centr. f. Chir.* No. 13, 1903; [19]*Med. Rec.* Nov. 21, 1903; [20]*Med. News*, Jan. 2, 1904; [21]*Med. Rec.* Nov. 14, 1903; [22]*Treatment*, Aug. 1903; [23]*Münch. Med. Woch.* Dec. 2, 1902; [24]*Ann. Surg.* June, 1903; [25]*Med. Rec.* Jan. 9, 1904; [26]*Brit. Med. Jour.* April 23, 1904; [27]*Med.-Chir. Trans.* vol. lxxxvii, p. 609; [28]*Proc. Roy. Soc. Edin.* 1903.

**ANÆSTHESIA (Local and Spinal).** *Priestley Leech, M.D., F.R.C.S.*

Connell[1] thinks Schleich's **Infiltration Anæsthesia** is better in some cases than general anæsthesia. The advantages are: (1) Removal of danger of death on the table; (2) Avoidance of after-effects of general anæsthesia, but post-operative pneumonia occurs as frequently after one as the other; (3) No post-operative nausea, vomiting, or unconsciousness; (4) No danger of patient being drowned in fæcal vomitus; (5) Patient being conscious is able to assist the operator; (6) One assistant less is needed.

Dr. Samuel Gant[2] has found the **Injection of Water** a most satisfac-

tory anæsthetic in operations on the rectum, a region notoriously sensitive. The temperature of the water is unimportant, but warm water is preferable, as it causes the least discomfort. Saline solution does not appear to have any advantages. A fold of skin is pinched up between the finger and thumb, and compressed for a few seconds a needle is quickly introduced between the layers of the skin, and a few drops of water are slowly injected. A small localized distension, not unlike a blister, should be produced ; this is done along the whole line of incision, care being taken not to go entirely through the skin. Then the needle is plunged through the skin in this distended line, and injections are made into the subcutaneous tissue. Internal hæmorrhoids can be anæsthetized in thirty seconds by injecting into the centre sufficient water to turn them white, and they can then be painlessly removed by excision, ligature, or clamp and cautery. In operations for fissure and fistula, which require division of the sphincter, the skin and subcutaneous tissue are distended up to the anal margin, and finally injections are made into the mucosa, submucosa, external and, if necessary, internal sphincter, until sufficient pressure is exerted on the nerve endings to abolish sensibility.

*Spinal Anæsthesia.*—Bier and Donitz[3] say that spinal anæsthesia as advocated by Bier was at first taken up with too much enthusiasm, but think that its dangers can be obviated by using **Adrenalin** in conjunction with the cocaine. **Cocaine** has been found more satisfactory than any of the substitutes proposed. The needle is plunged between the second and third lumbar vertebræ. As soon as cerebrospinal fluid escapes, 1 cc. of a 1–2000 solution of **Adrenalin** is injected, and (the syringe remaining in place) at the end of five minutes a solution containing from 0.005 to 0.02 gram of cocaine is injected through a second syringe. **Suprarenin** was used in place of adrenalin, and seemed to be more satisfactory. In all, 121 cases were thus anæsthetized, for operations of all degrees of severity. No signs of danger were observed, but the headache, nausea, etc., have not been much reduced, and the method must be reserved for selected cases. They advise keeping the patient's shoulders raised throughout the operation, and never employ the Trendelenburg position, and this assists the adrenalin in preventing the cocaine travelling too far up the spinal cord.

References.—[1]*Ann. Surg.* Dec. 1903 ; [2]*New York Med. Jour.* Jan. 23, 1904 ; [3]*Münch. Med. Woch.* April 5, 1904.

## ANEURISM.

*Prof. A. H. Carter, M.D., F.R.C.P.*

*Cardiac Aneurisms.*—Dr. Hall[1] has an excellent paper on this subject. He divides them into three groups, according as the cardiac walls, valves, or coronary arteries are affected. Aneurisms of the cardiac wall occur in a large majority of cases in the left ventricle, near the apex ; twice as frequently among men as compared with women ; generally between forty and seventy years of age. They are as a rule attended with very little cardiac deformity, and the pericardium

over them is generally adherent. They may result occasionally from some acute lesion, such as infarct of the myocardium, but almost always from chronic fibroid myocarditis. The chief cause in the author's opinion is obstruction of the coronary arteries, from atheroma or syphilis, but alternative views are fully and fairly discussed. The symptoms are absolutely untrustworthy, which may be gathered from the fact that in only one out of seventy-six collected cases, was a cardiac aneurism suspected *ante mortem*. The same may be said of physical signs. The sign most constantly present is a gallop-rhythm, due to reduplication of the second sound.

In aneurisms of the septum, a distinction must be drawn between the fibrous part (in the neighbourhood of the fossa ovalis) and the muscular part of the inter-ventricular septum. In the former, aneurisms are usually due to congenital defect. In the latter, it is due either to coronary obstruction (as in the ordinary type) or more often secondary to endocarditis, especially of the ulcerative form.

Aneurism of the valves usually affects the aortic or mitral valves—the posterior cusp of the former, or the anterior cusp of the latter. The valves of the right side of the heart are very rarely affected.

Of 24 cases of aneurism of the coronary artery collected by the author, only 9 were over thirty years of age, and only 6 over forty. This fact is strongly against atheroma as the cause. Evidence seems to be in favour of embolic origin, though it is not proved. Such aneurisms show a marked tendency to early rupture. Apart from rupture they give rise to no clinical signs or symptoms, and their existence could at best be only guessed at.

*Aneurism of Thoracic Aorta.*—Hugh Walsham[2] draws attention to the transverse position assumed by the heart in aneurism of the arch of the thoracic aorta, and accords to it a diagnostic value. In one of the cases brought forward to illustrate this fact, there was well-marked aortic regurgitation, and it was at once noted that the apex beat was not displaced downwards, as would be expected in this condition, but only outwards; and this observation led to a further enquiry, and the discovery of an aneurism with the heart lying in a transverse position.

Boutillier[3], in publishing a case of thoracic aneurism in a girl of nine years old, has collected a list of 60 cases of aneurisms occurring under twenty years of age, with brief notes of each.

Kingdon[4] records three remarkable cases of thoracic aneurism treated successfully by large doses of **Iodide of Potassium.** He lays stress upon employment of the drug in unusually large doses—70 grains three times a day in the first case, continued for three months; 75 grains thrice daily for fourteen weeks in the second case; and in the third case the dose was ultimately raised to 80 grains thrice daily for a few weeks. In the last case, the aneurism projected beyond the chest-wall for about an inch and a

quarter, pulsated strongly, and at one time began to leak on the surface. Yet this case (seen in consultation with Sir W. Broadbent and again with Sir W. J. Collins) was ultimately cured, as well as the other two. The drug treatment was combined with low diet (Tufnell), absolute rest, and a close restriction of fluids. Kingdon evidently does not believe in "iodism," and recalls the advice of an old teacher, who said that if iodism showed itself, the proper course was to double the dose.

It may be worth while to recall to the reader the actual diet originally recommended by Tufnell, namely: 2 oz. of bread and butter, and 2 oz. of milk for breakfast; 2 or 3 oz. of bread, and 2 or 3 oz. of meat for dinner, with 2 to 4 oz. of milk or claret; and 2 oz. of bread and butter with 2 oz. of milk for supper. Dr. Kingdon does not say whether this Spartan *regime* was absolutely enforced.

*Aneurism of Abdominal Aorta.*—Bryant[5], in a clinical lecture on this subject, states that the disease is much more common among men than women, chiefly between thirty and forty years of age, and is generally caused by syphilis, or violent exertion, or by both factors combined. The saccular and diffuse forms are the most frequent, the latter being usually produced by a rupture of a saccular aneurism into adjacent tissues; 67 per cent of all cases occur in the neighbourhood of the cœliac axis. If death directly results from aneurism, it is almost always from rupture, generally (57 per cent) into the retro-peritoneal tissues, or peritoneal cavity. Embolism is not uncommon, and most often affects one of the renal arteries; sometimes even the aorta itself becomes blocked by detached thrombus. The symptoms vary widely, according to the position of the aneurism, and the part with which it comes into contact. Pain in the back or abdomen (or both) is the most constant symptom. It may be persistent or paroxysmal, localized, or radiating into distant parts. The most characteristic physical signs are an expansile, pulsating, abdominal tumour, exhibiting a systolic murmur, and sometimes a thrill.

References.—[1]*Edin. Med. Jour.* Oct. 1903; [2]*Lancet*, May 9, 1903; [3]*Amer. Jour. Med. Sci.* May, 1903; [4]*Lancet*, Aug. 23, 1903; [5]*Clin. Jour.* Nov. 18, 1903.

**ANEURISM (Surgery of).** *Priestley Leech, M.D., F.R.C.S.*

Bryant[1] says that a diagnosis of abdominal aneurism is not always easy. He collected the records of 54 cases, and out of these only 18 were correctly diagnosed during life. An analysis showed that an abdominal tumour was detected in 31, pulsation in 35, expansile pulsation in 8 only, and a systolic murmur in 26. A diagnosis of abdominal aneursim is made much oftener when it is not present, than an incorrect diagnosis when it is present; and the condition which most frequently leads to this is pulsating abdominal aorta; this is much more common in women, while in them aneurism is very uncommon, there being only 5 cases out of 54. Many tumours

have been mistaken for aneurism, especially if lying over the front of the aorta (as in those of the pyloric end of the stomach), as they pulsate on account of their close relationship to that vessel. The pulsation, however, is not expansile, but distinctly transmitted, and the tumour may be found to move downwards on inspiration—a condition which is rarely associated with aneurism of the abdominal aorta. Another important distinguishing test is to examine the patient in the knee-elbow position, when the pulsation will disappear if due to a malignant tumour, but not if it is an aneurism.

The prognosis is extremely grave. The average length of life from the time that the aneurism first becomes manifest is about thirteen months.

The treatment is unsatisfactory and discouraging. Instances of cure brought about as a result of **Pressure on the Abdominal Aorta** have been recorded, but are few and far between; treatment by Lister's clamp is unsatisfactory; and more is probably to be hoped from the introduction of fine wire as in the **Moore-Corradi Method**, and electrolysis. Salinger[2] records a case of large thoracic aortic aneurism thus treated by **Gold Wire** and **Electrolysis**, in a man aged seventy-three. Sixteen feet of gold wire were introduced. The end of the wire was attached to the anode of the battery, the cathode terminating in a large plate, which was frequently moistened and applied to the patient's back. The current was passed for one hour and fifteen minutes. On the third day cerebral embolism occurred, but the patient recovered from this, and went out with the tumour solid and without pulsation.

Kehr[3] reports a unique case of **Ligature of the Hepatic Artery** for aneurism. The last work on this subject was written by Hanssons in 1897, in which he had collected 22 cases of this disease from various periodicals; in 3 cases only was surgical treatment attempted, and all died. The clinical picture was that of gall-stones at first. The sequence of events was aneurism of the hepatic artery, rupture into the cystic duct, and thence to the gall-bladder and through the ductus choledochus into the stomach, giving rise to hæmatemesis, in March, 1902. The last bleeding occurred in July, when the cystic duct was probably blocked by a blood-clot, and the gall-bladder, which could not empty itself, acted as a tampon on the aneurism. The sac became filled with masses of fibrin, and the forcible pressure which was exercised by the gall-bladder on the walls of the aneurism may have brought about the development of a collateral circulation which ensured the success of the operation. The hepatic artery was as thick as a lead pencil; two ligatures were applied, and the artery divided between them. None of the usual causes of aneurism could be discovered.

Sheldon[4] reports a case of aneurism of the innominate artery; the right common carotid and subclavian arteries were tied. Pulsation

in the tumour was not affected by the operation; repeated hæmorrhages occurred from the carotid artery, and the patient died.

Shepherd, of Montreal[5], treated an aneurism of the external iliac artery in a man forty-three years old by **Digital Compression** above the tumour, with success.

Rushton Parker[6], in a case of cirsoid aneurism of the forehead, laid it open by a triple incision down to the bone, making three flaps, each of which was compressed by a sponge; the undilated vessels were picked up by forceps, and the cavernous dilatations cut away along with spongy nævoid tissue. The case was cured.

Carl Beck[7], of New York, in a large racemose aneurism, first tied the temporal arteries, and the frontal and angular arteries, and then five days later **Extirpated** the tumour. In spite of a prophylactic suture carried round the normal tissues adjoining the tumour, and digital pressure, the bleeding was very profuse.

R. T. Morris[8], of New York, reports a case of popliteal aneurism (fusiform) successfully treated by **Matas's Method** as described in last year's *Annual*.

*Subclavian Aneurism.*—Oberst[9], in an article on this subject, has collected some 32 cases of operation; 21 were on the right side and 11 on the left; 7 died. Two of these deaths were due to hæmorrhage consequent on the ligature cutting through, without any infection; in two cases death was due to the ligature of the innominate and common carotid, with subsequent circulatory disturbances in the brain; and in another case a fresh aneurism formed proximally to the first one, and led to death from rupture; V. Braun lost a patient three weeks after operation from embolus of the lung. As regards the various methods of treatment of the aneurism, ligature of the innominate led to three deaths (50 per cent); with ligature of the first, second, and third portions there was a death after a ligature of each portion, and in one case where the aneurism was extirpated, death took place. His conclusions are :—

1. In selected cases, compression on the proximal side of the aneurism is to be commended.

2. The operative treatment of subclavian aneurisms which should usually be recommended, is ligature of the vessels on the proximal side of the aneurism.

3. Extirpation is only to be recommended in unusually favourable cases.

4. In ligature of the first part of the artery, and particularly in extirpation of a subclavian aneurism, it is much better to resect the clavicle, as then the artery can be seen.

5. The results of distal ligature are uncertain.

References.—[1]*Clin. Jour.* Nov. 25, 1903; [2]*Ther. Gaz.* July 15, 1903; [3]*Münch. Med. Woch.* p. 1861, 1903; [4]*Amer. Jour. Med. Sci.* Nov. 1903; [5]*Ann. Surg.* Oct. 1903; [6]*Brit. Med. Jour.* Feb. 6, 1904; [7]*Ann. Surg.* Oct. 1903; [8]*Ibid*; [9]*Beitr. z. klin. Chir.* xli. Bd. 2 Heft.

**ANGINA PECTORIS.** *Prof. A. H. Carter, M.D., F.R.C.P.*

In the treatment of the anginal paroxysm, Waugh[1] advises following up the administration of **Glonoin** with subcutaneous injections of **Atropine,** at the rate of gr. $\frac{1}{250}$ every ten minutes, till the mouth begins to dry. He says that by this means the effect of the glonoin may be greatly prolonged. During the interval, much may be done by regulation of the personal hygiene, keeping the alimentary canal clear and aseptic, by attention to the diet, by exercises and baths, and by avoidance of worry and over-work. Medicinally he recommends, in syphilitic and rheumatic cases, the following :—

| | | | | | |
|---|---|---|---|---|---|
| R | Mercury biniodide | gr. $\frac{1}{20}$ | Arsenic iodide | gr. $\frac{1}{60}$ |
| | Iodoform | gr. $\frac{1}{2}$ | Phytolacca or Stillingin | gr. $\frac{1}{2}$ |

To be taken before each meal.

In gouty cases he gives **Colchicine,** in a single dose at bedtime of gr. $\frac{1}{60}$, gradually increased until it causes slight nausea or catharsis in the morning. A week's use of **Zinc Phosphide,** gr. $\frac{1}{6}$ four times a day, repeated once a month, is often of great service.

Reference.—[1]*Ther. Gaz.* Nov. 15, 1903.

**ANKYLOSTOMIASIS.** *J. W. W. Stephens, M.D.*

Sandwith[1], making control observations, comes to the conclusion that the markings on the tongue described by Delamere, of British Guiana, as characteristic of ankylostomiasis, have no such diagnostic value. Leonard[2], investigating the question in Grenada, West Indies, found that out of 112 cases of ankylostomiasis 89 had pigmentation, spots, or patches on the tongue. Out of 250 without ankylostomiasis, 29 only showed colonies of pigment in the sclerotic.

Loos[3] describes the course of infection. The larvæ are hatched in mud, and reach man either through food, or by infection through the skin, which they penetrate without causing any visible injury. They enter the blood or lymph channels primarily, and eventually reach the lungs. Growth now begins in the air vesicles : they pass into the bronchioles, bronchi, and trachea, and, emerging through the glottis, pass down the œsophagus to the duodenum, where they become sexually mature. Bidder[4] states that about 80 per cent of the men in some continental mines are infected. Symmers[5] comments on the fact that there is an absence of any wound or bleeding in the intestinal wall to which the worms adhere. The worm appears to secrete into the blood some substance causing the peculiar anæmia.

Treatment.—Ashford and King[6] discuss the treatment of this affection by **Thymol.** The condition of the patient should be carefully studied first. His condition should be supported by careful diet and tonics, previous to the thymol treatment ; also previous to the giving of the thymol the patient should receive a purge of **Epsom Salts** or **Calomel.** The thymol is given in cachets or capsules containing 1½ to 2 grams : 6 grams is the limit. It should not be given liquid or in

powder form. Scheube insists that the patient should strictly keep to the recumbent position. Two or three doses may be given at two-hour intervals. After the last dose a purge must be given to eliminate all thymol from the intestine. No alcohol, ether, chloroform, glycerin, turpentine, or oils should be given while the thymol is in the gut, as the drug is soluble in these media. Treatment should only be carried out once in every seven to ten days.

Wimberley[7] records a case in the Punjab. Fearnside[8] finds that in certain regions in Madras more than half the population are affected. The bowels of those affected showed the presence of small congested areas from one to several cms. in diameter, and the mucus was thickly streaked with blood. Fearnside examined the question of pigmentation of the tongue, but found it about equally common in those affected and those not affected. Clayton Lane[9] finds that in Puri and Chupra jails about 70 per cent of prisoners are infected, and he quotes the following data with regard to other regions: Andamans, 76 per cent; Durbhanga, 83 per cent; Dacca, 12 per cent. He points out that when a patient is infected there occurs in the bowel also undigested food, in this case *dal* granules. Bentley[10], in Assam, found only one person in 600 free from infection. The number of worms present may vary from six or eight to many hundreds. The author recommends **β-Naphthol** in 15-gr. doses in preference to thymol. He draws attention to the eosinophilia as an aid in diagnosis of this and other worm infections. Maddox[11] states that over 60 per cent of prisoners in the jail at Ranchi, Chola Nagpur, contain ankylostomes.

Boycott and Haldane[12], from a study of the disease in Cornish mines, discuss several points in the life history of the worm. They cite evidence that the adult worms may live in the bowels for several years. Even if patients have recovered from their symptoms, it is no guarantee that they do not still harbour worms and ova in the fæces. In fæces the eggs generally occur in the 4-cell to 16-cell stage. Even when all the conditions are made the same, it is not possible always to get the larvæ to hatch out in fæces kept moist and exposed to the air. Development is often better in dry fæces than moist. The authors thus sum up what is known of the conditions which determine development outside the body:—

*Temperature.*—The eggs are killed at 0° C. or 40° C. by exposure for twenty-four hours. At a temperature of 16 to 30° C. the majority of eggs will hatch in some days. After hatching, the larva moults once or twice, and is now 0·6 mm. in length. The chitinous sheath is very prominent, and more or less separated from the contained larva. This is the so-called "encapsuled" stage, and it is important to recognize that it is the *infective* one. The authors state that the best way of procuring these "encapsuled" larvæ is to place the fæces in a dish covered with a very shallow layer of water. The minimum temperature at which these larvæ can be grown is 13 to 16° C. according

to the authors, 20° C. according to Bruns. In the authors' experiments four to eight days were taken to hatch the eggs at 16° C., and another three to four weeks for the larvæ to reach the "encapsuled" stage.

*Moisture.*—Thorough drying kills eggs and larvæ. Immersion in water will kill eggs, but larvæ thrive in it.

*Oxygen.*—If eggs are covered with water they will not develop, though it takes ten days to kill them in this way.

*Disinfectants.*—The eggs, being covered with a "chitinous" coat, are extremely resistant to disinfectants. They resist 2 per cent corrosive sublimate. The newly-hatched larvæ are easily killed by any disinfectant. The "encapsuled" larvæ, however, are not killed by 2 per cent corrosive sublimate in six hours, and can withstand 25 per cent sulphuric acid for three or four hours. But "encapsuled" larvæ are destroyed in twenty-four hours by even weak disinfectants.

*Longevity of Eggs and Larvæ.*—Data on these points are scanty, "but there is no reason for supposing that infected fæces will become innocuous if left alone for several months."

*Infective Stage.*—Ova and freshly-hatched larvæ are not infective, but if "encapsuled" larvæ are swallowed, ova appear in the fæces in about a month.

*Paths of Infection.*—Hence it follows that infection can take place by the mouth. We have already described Loos's results on infection through the skin. Bentley's results on "pani-ghao," "water itch," or "ground itch" may be mentioned in this connection. This itch occurs in Assam, and probably also in the West Indies. The feet of coolies exposed to polluted ground, in a few hours begin to itch and burn, and there follows a vesicular eruption which soon becomes pustular. Bentley produced the same symptoms by applying moist earth containing ankylostoma ova (incubated for a week) to the skin of the arm. Control experiments were negative. In ankylostomiasis as seen in the Cornish mines, there likewise appeared a vesicular eruption preceded by itching, known as "the bunches"; it occurs mainly on the arms. Attempts to produce it by rubbing contaminated earth into the arm failed. Cultures of ankylostomes also gave a negative result.

Diagnosis.—The symptoms which suggest ankylostomiasis are: (1) Anæmia; (2) Gastro-intestinal disturbances; (3) Skin eruptions (?). In searching for eggs it is best to dilute the fæces and examine the watery films with a $\frac{1}{2}$ to 1 inch lens. The characteristics of the egg are: (*a*) Its regular outline, not flattened on one side as in oxyuris; (*b*) The egg-shell appears as a single thin line, not two as in oxyuris; (*c*) Ascaris eggs with the outer mamillated covering absent, have a much thicker shell; (*d*) The eggs measure on an average 59 μ by 37 μ.

*Detection of the Worms.*—An anthelmintic is given, followed early by a purge to prevent digestion of the worms in the gut. The fæces are washed with water several times, allowing the sediment to settle:

by this means they become odourless. The fæces are poured on to a plate and the worms carefully searched for. They are about half an inch long (female). The mouth has hooks, and the copulatory bursa of the male is characteristic. If larvæ are found in *freshly-passed* fæces, the probability is that they are those of *Anguillula stercoralis*, which is commonly found in association with ankylostoma duodenale. Rarely do ankylostome ova hatch within the alimentary canal; on the contrary, anguillula appears in the stools as larvæ, and not as ova.

Boycott[13] has continued these investigations into ankylostomiasis. Considering the methods of diagnosis at our disposal, the author discusses each of them. (1) General inspection for anæmia; but absence of this sign must not be taken to imply absence of infection, otherwise serious error may arise. (2) Microscopical examination of fæces: (*a*) Repeated examination is necessary before a negative diagnosis can be made; (*b*) Eggs are not found for a month or six weeks after the larvæ have entered the gut. (3) Blood examination: (*a*) Determination of Hgb; (*b*) Determination of the percentage of eosinophile cells.

With regard to this last point, a large number of counts showed out of 148 cases infected with worms: 3·4 per cent of cases had under 5 per cent of eosinophile cells, 2·7 per cent had from 5 to 8 per cent, 93·9 per cent of cases had over 8 per cent, and 33·1 per cent had over 20 per cent of eosinophiles; whereas of 158 non-infected persons 91·1 per cent had under 5 per cent of eosinophiles, 7 per cent from 5 to 8 per cent, 1·9 per cent over 8 per cent, and 1·3 per cent over 20 per cent of eosinophiles. It is necessary to bear in mind in estimating the value to be attached to an eosinophilia, other conditions which also may give rise to this condition, *e.g.*, bilharzia hæmatobia, ascaris, oxyuris, trichina, filaria, trichocephalus, anguillula, tænia, echinococcus cysts, bothriocephalus, asthma, pemphigus.

With regard to the conditions which determine eosinophilia, it is: (1) Most marked in early cases before anæmia has set in; (2) It may occur within twenty days after contact with encapsuled larvæ; (3) Apparently the eosinophilia may persist some time after the disappearance of ova; (4) The eosinophilia may be disguised by a neutrophile leucocytosis arising from any cause.

References.—[1]*Jour. Trop. Med.* Aug. 15, 1904; [2]*Ibid*, Oct. 15, 1904; [3]*Nature*, p. 519, 1904; [4]*Ibid*; [5]*Ibid*; [6]*New Orleans Med. and Surg. Jour.* p. 651, 1904; [7]*Ind. Med. Gaz.* Mar. 1904; [8]*Ibid*, April, 1904; [9]*Ibid*; [10]*Ibid*; [11]*Ibid*; [12]*Jour. of Hyg.* p. 77, 1904; [13]*Ibid*, p. 439, 1904.

**ANTRUM OF HIGHMORE.** (*See* Nasal Accessory Sinuses.)

**ANUS.** (*See also* Rectum.) *P. Lockhart Mummery, F.R.C.S.*

*Pruritus Ani.*—Very little in the way of new treatment for this disease has been brought forward during the last year. Curtis[1], of Kansas, speaks highly of a mixture of **Witch-hazel** and **Extract of Ergot** in equal parts. Half an ounce of the mixture should be used as a rectal injection. He objects to the use of ointments as uncleanly.

Prof. Pennington[2] reports 13 cases of old-standing pruritus ani cured by the action of **X-rays**. The skin of the anus and surrounding parts was exposed to the rays every other day for two weeks; an interval of one week was then allowed to elapse before continuing the treatment. The time necessary to effect a cure varied considerably.

*Local Anæsthesia in Rectal Disease.*—Gant[3], of New York, in a paper on this subject, advises injections of **Sterile Water** into the skin for the production of anæsthesia in operations upon the anus and rectum. He considers this method preferable to the injection of cocaine or eucaine, as toxic effects are impossible. The injections are made between the layers of the skin, a few drops of water being injected at numerous different points into the skin, and also subcutaneously. The area of skin through which the incision is to be made is infiltrated in this way until it is raised and anæmic.

*Incontinence of Fæces.*—Arthur Burgess[4], of Manchester, reports two cases of this condition treated by **Injections of Paraffin** into the submucous tissue above the anus and round the lower portion of the rectum. In both cases there was complete paralysis of the sphincter muscle of old standing. The treatment was successful in one case, but in the other a subsequent operation had to be performed. The same writer reports nine cases of prolapse treated by paraffin injections into the peri-rectal tissues. The treatment was successful in all the cases, but it is not stated for how long they were kept under observation. This is important, as it is a well-known fact that cases of prolapse are very apt to recur.

References.—[1]*Ther. Gaz.* Aug. 15, 1903; [2]*New York Med. Jour.* Feb. 20, 1904; [3]*Ibid*, Jan. 23, 1904; [4]*Lancet*, March 12, 1904.

**AORTA, (Disease of).** *Prof. A. H. Carter, M.D., F.R.C.P.*

In a characteristic address, Dr. Clifford Allbutt[1] deals with disease of the ascending aorta, as apart from aortic valvular lesions, aortic aneurisms, and general arterial changes. With regard to acute aortitis, he says that it is not always the perilous disease it is supposed to be; that it is most frequent in acute specific fevers, especially small-pox; and that in favourable cases all evidences disappear in a few weeks. In acute rheumatism it may also occur; in some cases beginning independently, and in others extending from the heart or from pericarditis. A form due to malaria, though fortunately rare, appears to be characterized by unusual severity and structural damage. With regard to chronic aortitis, he lays special stress upon syphilis as an important factor in many cases, usually in association with general syphilitic arteriosclerosis, but not necessarily so. He affirms that this, together with all forms of aortic disease as they become chronic, tends to merge into atheroma.

The chief symptoms of chronic aortitis are headache, troublesome vertigo, and dyspnœa, not unlike asthma, but without relief by expectoration, and without Curschmann's spirals. He suggests that

the dyspnœa may be due to reflex irritation. With dilatation of the aorta there may be pressure symptoms quite apart from aneurism. Pain is by no means constant, and may be anginal in type without necessary implication of the coronaries. Physical signs may be observed in the later stages, such as those of premature senility, prominence and pulsation of the veins of the neck, and undue arterial pulsation at the root of the neck, while the right subclavian artery may be palpable, or even visible above the clavicle. He regards undue mobilization of the cardiac apex as evidence of elongation of the ascending aorta. On percussion, a dull area may be found over the manubrium sterni extending towards the second space and third rib, on the right. The auscultatory signs are equivocal, but he regards a sharp drum-like character of the aortic second sound, and friction of dry basic pericarditis (when either are present) as valuable evidence.

*Co-arctation of Aorta.*—G. Murray[2] records an interesting case of this rare condition. The chief points on which a diagnosis of the condition may be based are the following: The presence of strong pulsation in the arteries of the head, neck, and arms, associated with absence of pulsation in the abdominal aorta and femoral arteries, together with enlargement and pulsation of superficial arteries, indicating the establishment of a collateral circulation by anastomosis between vessels communicating with the arch of the aorta on the one hand, and with the descending thoracic aorta on the other; well-marked evidence of dilatation and hypertrophy of the left ventricle, and in some cases of the right as well. The presence of a systolic murmur, heard loudly behind, to the left of the upper dorsal spine, as in his case, and widely conducted over the back, indicates that the co-arctation is incomplete. When it is complete, this murmur, which is generated by the aortic stricture, is naturally absent.

For *Aneurism of the Aorta*, *see* ANEURISM.

REFERENCES.—[1]*Lancet*, July 18, 1903; [2]*Pract.* Feb. 1904.

**AORTIC REGURGITATION.** *(see* HEART.)

**APHASIA.** *Purves Stewart, M.A., M D.*

Most cases of aphasia which come under the physician's observation are due to an organic focal lesion in or near the well-known sensory or motor cortical centres associated with the functions of speech. And such focal lesions are most commonly of vascular origin:—embolism, hæmorrhage, or thrombosis, the last being the most frequent. Other important causes include cerebral abscess, meningitis, encephalitis, and brain tumours.

It is, however, less frequently realized that aphasia may occur as a *temporary* symptom in *certain acute diseases*, without any evidence of a gross organic lesion. Thus it occurs, for example, in fevers (enteric, pneumonia, influenza, etc.), in the puerperium, in diabetes, gout, and renal disease. Such varieties of aphasia must be regarded as toxic in

origin, being due to poisoning of the cortical speech centres by toxins produced by the specific microbe of the particular disease. Aldrich[1] directs attention anew to these facts, and records an example occurring in an otherwise uncomplicated case of small-pox. The aphasia was of the motor variety, and was observed when the child recovered consciousness after the primary rash appeared. The patient remained speechless for over three months, and then rapidly recovered.

REFERENCE.—[1]*Amer. Jour. of Med. Sci.* March, 1903.

**APPENDICITIS.** *A. W. Mayo Robson, F.R.C.S.*

Villaret[1] found from the study of the statistics of the German army, that while in the year 1873 the percentage of cases of appendicitis was only 0·52 per cent, in 1900 it was 1·73 per cent. That this increase is only apparent, however, is shown by the fact that peritonitis, liver diseases, and stomach diseases have all fallen off greatly, so that while in 1873 the total mortality from these three conditions plus appendicitis was 4·79 per cent, in 1900 the corresponding figure was only 2·66 per cent. It is therefore clear that the greater number of cases of appendicitis encountered at present, is due only to more accurate diagnosis.

Chauvel[2] analysed the statistics of the French army from 1901 to 1902, and found a very striking difference in the morbidity among Algerian as compared with other divisions of the troops. In the latter, the number of soldiers attacked by the disease was 1·26 per 1000; among the French troops in Algiers and Tunis, the proportion was 0·64 per 1000, or just one half; while among the native troops in Algeria it was only 0·14 per 1000. Similar results are recorded by Schneider, the Court Physician of the Shah of Persia, and both he and Chauvel believe that the rarity with which Mohammedans are affected is due to the fact that their dietary is largely vegetarian, and that when meat is eaten it is always over-cooked. Among Europeans living in Mussulman countries, the liability to appendicitis appears to vary directly with the persistence with which they maintain western methods of alimentation. Moreover, appendicitis appears to be increasing among the Algerian and Tunisian soldiery, owing to many of them adopting European notions as to diet. In the discussion which followed Chauvel's paper, his views were strongly supported by Lucas-Championniere.

Dr. Philip Marvell[3] compared the records taken in the Episcopal and Pennsylvania hospitals during the periods 1884–94 and 1894–1904. A comparison showed that there had been a great increase during the latter period, and also a great increase over all the more important pelvic and abdominal inflammatory diseases. He did not think this increase could be entirely explained by better knowledge of diseases. He said that if we were unable to arrive at fixed conclusions, we could make the following deductions :—

1. That appendicitis has increased in the past five years much more rapidly than in either of the previous five-year periods studied.

2. That the accessory cavities were more frequently attacked, and when diseased, more likely to be aggravated by influenza than by other diseases.

3. That there is more than the possibility of the existence of chronic interstitial influenza, therefore a probability of its causative relation to appendicitis.

*Leucocytosis in Appendicitis.*—Cazin and Gros[4] state that, in spite of generally received opinions, leucocytosis is usually present from the outset of an attack of appendicitis, even in the absence of suppuration. Exception is made in certain hypertoxic forms, when the defensive reactions of the organism have not had time to take place. There is not at the onset of the attack, any noticeable difference in the proportion of leucocytes, between the cases which end in resolution and those terminating in suppuration; mere enumeration of the white corpuscles cannot therefore afford any assistance at the beginning of an attack of appendicitis as to diagnosis of type, and it is only by repeated counting of the leucocytes, morning and evening, that it is possible to distinguish cases which tend to resolution, from those in which an abscess is forming. The writers state, in a general way, that in mild cases ending in resolution, the proportion of leucocytes does not exceed twenty to twenty-five thousand, such increase, moreover, being very fugitive. In 17 cases examined by them, the number exceeded 15,000 on six occasions, twice it reached 15,400, and three times it varied between 20,200 and 22,000. When the number of leucocytes undergoes a considerable and permanent increase, then suppuration is present. Observations show that there is no relationship between temperature and leucocytosis, but repeated examinations of the blood during appendicitis prove beyond doubt that it is to leucocytosis, and not to temperature, that the greater importance should be attached in case of non-agreement, when the question of operative intervention arises.

The cases in which absence of marked leucocytosis has been noted when suppuration existed, may be divided into two classes: (*a*) Cases of non-circumscribed suppuration due to diffuse hypertoxic peritonitis: and (*b*) Cases of encysted abscesses, persisting after the acute symptoms. In abscesses shut in by a thick fibrous wall, absorption of toxin from the suppurating cavity does not take place, and hence leucocytosis may be absent. In cases of generalized peritonitis, leucocytosis indicates a defensive reaction, which renders the prognosis after operation comparatively favourable. Thus in a case of a patient suffering from generalized peritonitis and treated by immediate intervention, Kuttner found as many as 50,000 leucocytes, and the patient recovered. After evacuation of abscesses a decrease, generally rapid, of the leucocytosis is noticed. Very often, on the next day, the number of leucocytes is normal. When, on the contrary, there are several foci of suppuration, and only one has been opened, the leucocytosis persists. Curschmann

records a case where the leucocytic rate remained high, after appendicectomy with evacuation of an abscess. A second operation was performed, and another abscess in the pelvis was found and evacuated.

Sherren[5] published his observations on cutaneous hyperalgesia in appendicitis. His remarks are based on 124 cases of appendicitis, 40 of which showed cutaneous hyperalgesia. He comes to the following conclusions :—

1. Cutaneous hyperalgesia is probably present at some time during all first attacks of appendicitis, except perhaps in the fulminating type, and depends upon tension within the appendix.

2. It may be absent in attacks after the first, if the first attack was of sufficient severity to destroy nerve tissue in the wall of the appendix.

3. When present in attacks subsequent to the first, it often persists long after all other signs of the disease have gone, owing to the tension within the appendix being kept up by the presence of a stricture.

4. It gradually disappears during convalescence as the other signs of the disease clear up.

5. Disappearance of cutaneous hyperalgesia without improvement in the general condition of the patient, is a sign of perforation or gangrene of the appendix, and should be a signal for immediate operation.

6. The presence of cutaneous hyperalgesia is no contra-indication to operation. Abscesses may form and general peritonitis may develop while it is present.

7. Its absence, on the other hand, is of great importance. Absence of cutaneous hyperalgesia, the patient coming under observation early in the first attack of appendicitis, is a sign of gangrene of the appendix, unless the case is obviously a mild one and the patient is rapidly getting well.

8. Cutaneous hyperalgesia is, as a rule, absent in cases of abscess of the appendix.

9. The age of the patient and the position of the appendix have no influence upon the cutaneous hyperalgesia.

10. It is occasionally of use as an aid to the diagnosis of appendicitis.

*Technique of Appendicectomy.*—Riedel[6] holds that the usual method of dealing with the stump after removal of a diseased appendix, by stitching over it a dissected cuff of peritoneum, is very questionable practice. He prefers the following method. The appendix, after being detached from its mesentery, is constricted by a temporary catgut ligature at its base. A second ligature is applied half an inch on the distal side. The appendix is cut off between the ligatures. The extremity of the stump is now deprived of its mucous lining, and the opposed margins of the serous and muscular coats are brought together by three interrupted sutures. The catgut ligature at the base of the stump is cut away and the stump inverted into the cæcal cavity. It is then completely buried by two rows of sutures.

Zeller[7] advocates total extirpation instead of simple resection of the appendix. A portion of the cæcal wall is removed with the appendix, and the margins of the incision carefully brought together with sutures.

Ries[8] recommends inversion of the stump within the cæcum. A fine round straight needle with a thread, at the end of which is a thick knot, is introduced into the stump one-sixteenth of an inch from the cut surface from the inside outwards, then the needle is pushed back into the lumen of the appendix and on into the cæcum, and passed out through the cæcum about one inch from the base of the appendix. Pulling on this thread inverts the appendix. The serosa of the funnel of the inverted appendix is then stitched together. The inverting suture is cut close to the bowel wall and allowed to slip back. The mesentery is drawn into a small bunch and sutured over the funnel by tying the end of thread on the mesentery to the thread joining the serous surfaces. A simple method which I have employed for some years with great satisfaction is to ligature off the mesentery, to constrict by pressure forceps the root of the appendix, which is then amputated at the crushed part close to the cæcum : the stump is then buried by two purse-string sutures.

*Typhlitis after Appendicectomy.*—Fischl[9] gives an account of five cases, in all of which at some previous time the appendix had been removed. They all had symptoms of appendicitis, but the cases cleared up without operation under simple treatment. The author thinks that the symptoms are referable to an inflammation of the cæcum, and emphasizes the fact that there is undoubtedly such a disease as typhlitis, quite apart from any inflammation of the appendix.

*Parotitis complicating Appendicitis.*—Bunts[10] publishes three cases. In two, abscess formed in the parotid, in the third the swellings subsided without suppuration, but the patient died from slow sepsis and exhaustion.

Ochsner, of Chicago, recently reported 1000 consecutive cases of appendicitis operated at one hospital during the thirty-three months preceding May 1st, with a mortality of 2·2 per cent. He contends that the time to operate is not when the case is first seen, but either early, when the infection is localized in the appendix, or late, after the acute attack has subsided.

References.—[1]*Deut. Med. Woch.* Jan. 1, 1904 ; [2]*Bull. de l'Acad. de Med.* Nov. 3, 1903 ; [3]*Med. Rec.* June 25, 1904 ; [4]*Med. Press,* Sept. 30, 1903 ; [5]*Lancet,* Sept. 19, 1903 ; [6]*Centr. f. Chir.* No. 51, 1903 ; [7]*Ibid,* No. 45, 1903 ; [8]*New York Med. Jour.* July, 1903 ; [9]*Prag. Med. Woch.* No. 7, p. 32, 1904 ; [10]*Amer. Jour. Med. Sci.* May, 1904 ; *Lancet,* July 30, 1904.

**ARGYLL-ROBERTSON PUPIL.** *Purves Stewart, M.A., M.D.*

The loss of the pupillary reflex to light, with preservation of its reaction on accommodation, is one of the most valuable diagnostic signs of tabes and of general paralysis of the insane. Apart from these two diseases (which may be regarded as two phases of a degenerative process essentially the same, mainly spinal in the one, mainly cerebral

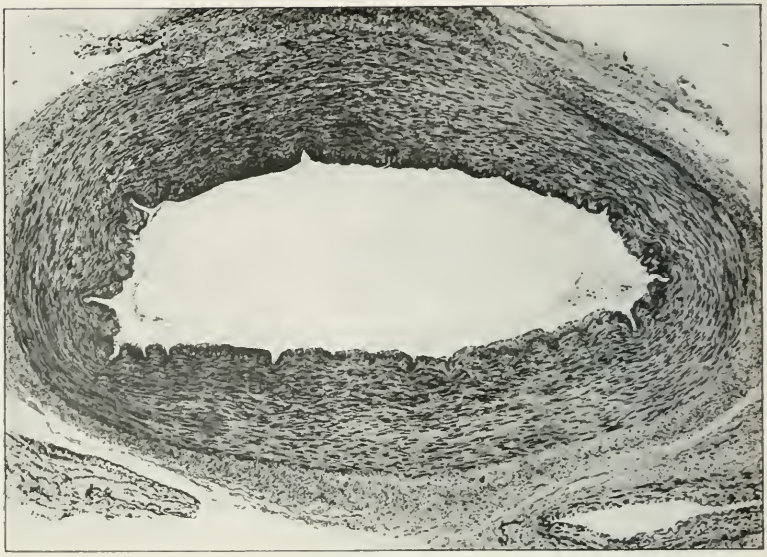

*Fig. A.*—Radial Artery from case of Cerebral Hæmorrhage, showing well-marked hypermyotrophy; × 60.

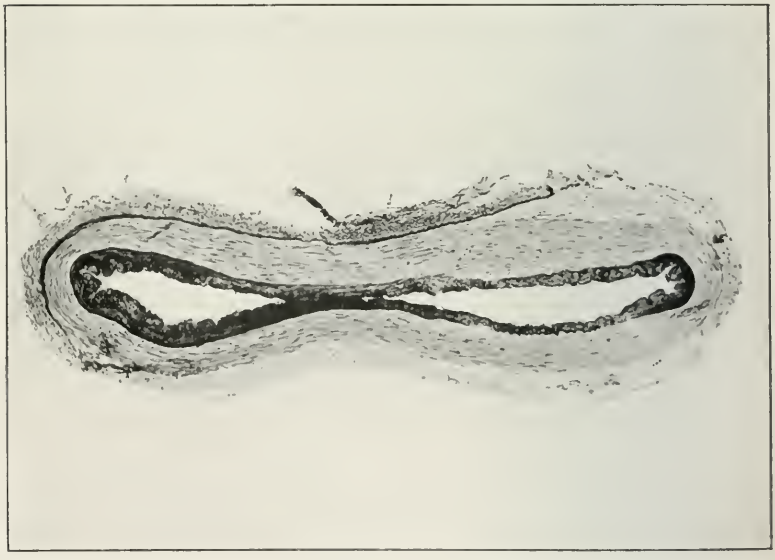

*Fig. B*—Healthy Radial Artery, for comparison; × 60.

in the other), the Argyll-Robertson pupil sometimes occurs as an isolated phenomenon in cases of previous syphilis, congenital or acquired. But the phenomenon is not a direct symptom of existent syphilis, even in the tertiary stage. Mitchell Clark[1] recently, in this connection, examined a series of 37 cases of gross cerebrospinal syphilitic disease. Cases in which oculomotor palsy was present were excluded, to avoid fallacy. In no instance was the Argyll-Robertson phenomenon typically present, though in two it existed unilaterally. On the other hand, in a series of 40 tabetic patients, no fewer than 31 showed the Argyll-Robertson pupil. It would therefore appear that syphilis alone, no matter how severe, is insufficient to produce the Argyll-Robertson phenomenon, and that in ordinary cerebrospinal syphilitic disease, the sign is not typically present. When it does occur, either as an isolated phenomenon, or along with signs of cerebrospinal syphilis, it is evidence of an additional *parasyphilitic* degenerative process within the nervous system.

Reference.—[1]*Brit. Med. Jour.* Dec. 26, 1903.

**ARTERIOSCLEROSIS.** *Prof. A. H. Carter, M.D., F.R.C.P.*

Much confusion and uncertainty still prevail with regard to the nature of this condition, its mode of evolution, and its pathological relation to other forms of arterial disease, especially to atheroma. This is partly due to want of agreement as to the connotation of terms employed. Thus, in Germany, the term "arteriosclerosis" is used to include atheroma; while pathologists of the French school make it practically synonymous with endarteritis. There have been several recent contributions to the literature of the subject[1].

Arteriosclerosis may be defined as a chronic generalized thickening of the arterial walls, as a result of which they become harder and less elastic than normal. It should be distinguished from atheroma, syphilitic endarteritis, purely degenerative conditions (senile or otherwise), and arterial thickening from implication in inflammatory change of adjacent tissues. But while maintaining its distinctive character, it must be admitted that arteriosclerosis is liable to be associated with any of these conditions, though in variable degrees of frequency.

The starting point of the arteriosclerosis consists, with little doubt, of some morbid alteration in the quality or composition of the blood, which may be brought about in different ways: for instance, by the introduction from without of poisons such as alcohol or lead; as the result of metabolic disorder from gout, rheumatism, nervous exhaustion, or over-feeding; or as a sequel of specific fevers, such as typhoid. One of the earliest and most frequent results of such blood-changes is an increase in blood-pressure (hyperpyesis) from increased resistance to the flow of blood in the capillary vessels. The increased peripheral resistance appears to be mainly—if not entirely—a physical phenomenon, depending upon changes in the density of the blood-plasma. Nevertheless, it must be remembered that the force and vigour of the

heart's action is an important factor in determining the effect of such peripheral resistance on the blood-pressure as actually observed. In response to the increased strain thus brought to bear upon the walls of the arteries, a generalized hypertrophy of the muscular coat takes place, together with (under ordinary circumstances) hypertrophy of the cardiac left ventricle, both of which must be regarded as compensatory in nature.

This condition of arterial hypermyotrophy (as it has been called) may persist for a variable time, with little or no other obvious structural change in the vessel. Sooner or later, however, further changes take place, starting in the intima, and characterized by overgrowth of subendothelial tissue elements, which—as time goes on—may be followed by corresponding fibro-nuclear proliferation in the media and adventitia. It seems reasonable to ascribe these proliferative changes to a nutritive disturbance, representing a further consequence of the blood-alteration above referred to. The writer believes that a very decided diminution in the lumen of the arterioles is sometimes brought about by these proliferative changes, though not with the same constancy or completeness as observed in syphilitic obliterative endarteritis. It is possible (though it is not proved) that obliterative changes of this kind, when they affect the *vasa vasorum* of the aorta, may in some measure account for and explain the association of aortic atheroma with arteriosclerosis, when it occurs.

At a still later stage, under circumstances which it is not possible to indicate exactly, the arterial condition enters upon a final phase of atrophy and degeneration. Though the degenerative change is in the main diffuse in its distribution, necrotic change may here and there be concentrated upon narrowly restricted areas of the vascular wall. The latter lesions have great clinical importance, because they explain the occurrence of rupture and hæmorrhage, which not infrequently form the closing scene of certain cases of arteriosclerosis. A very striking and beautiful instance of focal degeneration and necrosis affecting the middle cerebral artery in a case of arteriosclerosis, is seen in *Plate III., Figs. E* and *F*, among the illustrations appended.

Arteriosclerosis is very often (though not necessarily) associated with chronic Bright's disease ; and, when this occurs, both are referable to a common cause, namely, a morbid condition of the blood. Considerable variation may be observed in the arteries of the kidneys under such circumstances, when compared with typical arteriosclerosis elsewhere. For instance, the fibroid changes are more marked, there is more tendency to obliteration of the lumen of the vessels affected, and (in the later stages) atrophic changes are more striking. The writer would attribute these differences to the implication of the vessels in the structural lesions of the renal parenchyma.

The Symptoms of arteriosclerosis may be cardio-vascular, hæmic, cerebral, renal, pulmonary, and gastro-intestinal. Among the last,

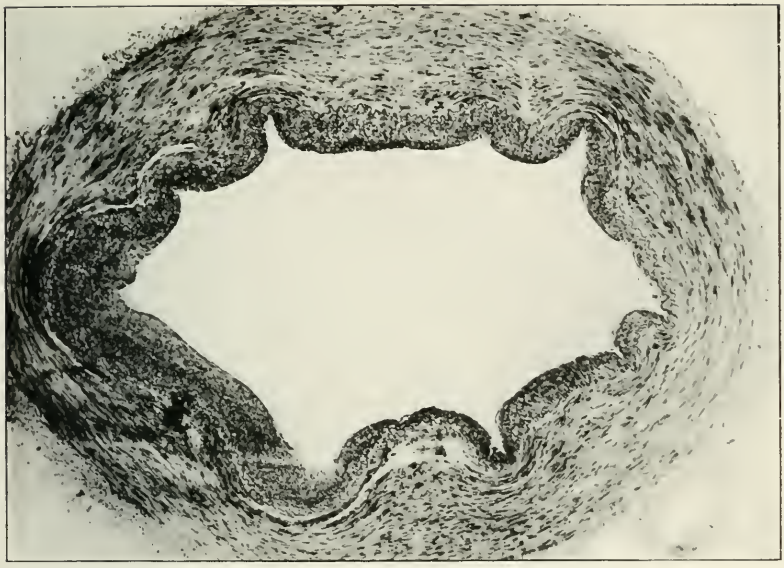

*Fig. C*—Radial Artery, showing hypermyotrophy with intimal proliferation; × 60.

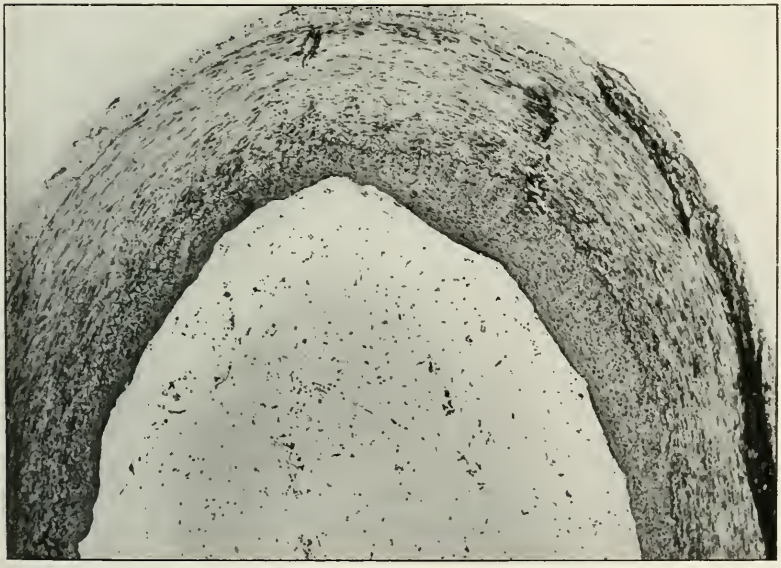

*Fig D.*—Radial Artery, showing hypermyotrophy, intimal proliferation, and commencing degeneration; × 80.

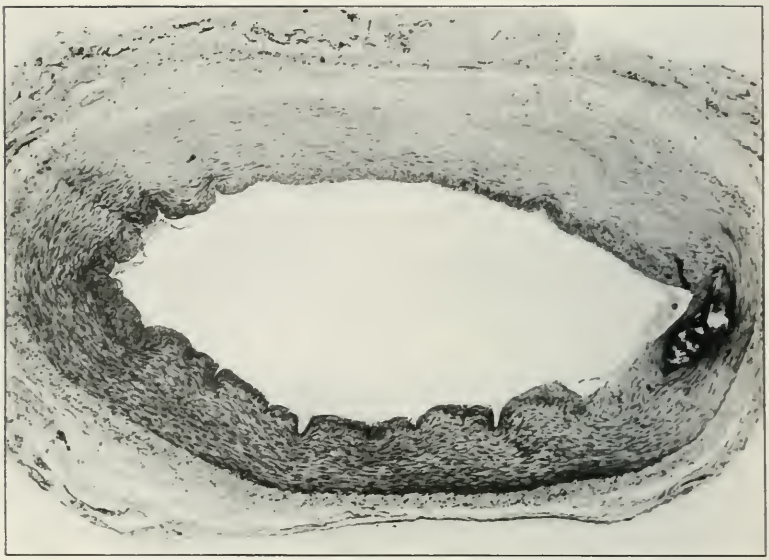

*Fig. E.*—Radial Artery, same case as *Fig. A, Plate I.* showing focal necrosis × 60.

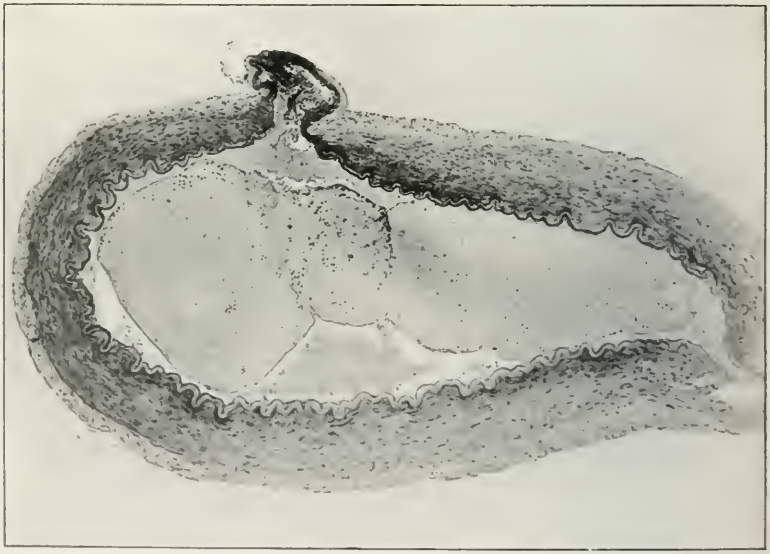

*Fig. F.*—Middle Cerebral Artery, from same case as *Fig. A, Plate I.* showing bulging from focal necrosis; probably antecedent to rupture and hæmorrhage.

constipation and indigestion (intestinal and gastric) are important, and tympanites and eructations are not uncommon. Pulmonary symptoms are sometimes so pronounced that a clinical group of "spasmodic asthma and pulmonary affections" has been described; and chronic fibroid pneumonia is, in certain cases, the pulmonary expression of the disease. The renal symptoms are those of interstitial nephritis. Cerebral symptoms vary, from mild dizziness and lack of memory (particularly recent) to violent vertigo, complete loss of memory, actual dementia, and apoplexy. Ocular symptoms are chiefly loss of vision. The diagnosis ultimately depends on the vascular symptoms: cardiac hypertrophy, pulse of long duration and high tension, with an increased second sound over the aortic orifice. The appearance and persistence of vague pains, or paræsthesiæ (tingling, prickling, numbness or persistent coldness), or sharp neuralgic attacks, demands a search for the vascular changes. Arteriosclerotic malnutrition is either flabby and corpulent, or sallow, emaciated, and rather cachectic, with arcus senilis. More or less anæmia is always present, and weakness, shortness of breath on exertion, præcordial distress, vertigo, and nausea may occur. When the coronaries are involved, fibroid degeneration of the heart, angina pectoris, coronary thrombosis with sudden death, and, rarely, aneurism or rupture of the heart, occur. Of these sequelæ chronic myocarditis is by far the most common. The earliest symptoms which, when present, arouse a justifiable suspicion of it, are a sallow, pallid face, with enlarged venous radicles, premature greyness, a tendency to a wet and leaky skin, and a distinct loss of strength and energy. Compared with the strength of the apex beat, the pulse is apt to be weak, and irregular or intermittent. Frequent gastralgic attacks are to be regarded askant They have extreme importance, and later become typically anginal, with irregular, weak, often slow pulse (50 to 30). These latter are rather characteristic. In advanced cases the physical signs of dilated heart with a gallop rhythm, often also the systolic apex murmur, occur. True angina pectoris is rather a rare symptom. If angina occur, even in the absence of hypertrophy and of palpable arterial hardening, along with heightened tension and accentuation of the aortic second sound with a peculiar, slightly harsh or clicking quality at the instant of closure, it is safe to say that the angina is genuine.

The illustrations appended, *Plates I, II, III*, are taken from microphotographs kindly lent by Dr. T. D. Savill. They clearly depict the various structural changes met with in arteriosclerosis.

References.—[1]*Med. Rec.* May 9, 1903; *Lancet*, Jan. 30, Feb. 25, May 28, 1904; *Brit. Med. Jour.* June 4, 1904.

**ARTHRITIS.** (*See* also Rheumatoid Arthritis.)

*Priestley Leech, M.D., F.R.C.S.*

Painter and Ewing[1] describe under the name *chronic villous arthritis* some 33 cases, with notes; their conclusions are as follows:—

Etiology.—The disease may arise from either: (1) Traumata; (2) Infections; or (3) Diathetic conditions.

1. *Traumata* may include direct blows and injuries; indirect injuries, *e.g.*, a strain or sprain; from within the joint, *e.g.*, a detached cartilage, etc.; loose bodies in the joint; forcible lacerations or wrenches of the ligaments of the joints; flat and pronated feet; fibrinous clots may cause sufficient trauma to irritate the synovia.

2. *Infections.*—Tubercle; gonorrhœa, and probably other infective processes; syphilis. The extensive hypertrophy of the synovial membrane due to syphilis has been mistaken both before and after exploration of the joint, for rheumatoid arthritis.

3. *Diathetic.*—Rheumatoid arthritis and osteo-arthritis.

Clinical History.—The joints most frequently affected with these kinds of arthritis are the knee, shoulder, ankle, and hip. The knee is most frequently affected. If due to trauma, the lesion is usually mono-articular; if to infection or diathesis, usually polyarticular. The symptoms usually come on insidiously, and vary somewhat. A frequently-recurring synovitis is often the main symptom.

Treatment.—This varies according to the cause of the arthritis. If due to pronated or flat foot, strap the joint where the ligaments are relaxed. In diathetic cases treat the individual, but if no improvement takes place, the presence of the fringes being a source of irritation, operative measures should be taken. Failing other treatment, operation may be done. In the knee an incision 5 to 6 cms. long is made on the inner side of the knee, and any fringes that may be felt are removed; if the fringes appear to be more numerous on the outer side, an incision may be made there. In bad cases an incision across the joint uniting the two lateral incisions and dividing the patellar tendon may be used, but in this case the knee requires to be kept immobile for some six weeks. As regards post-operative treatment, the dressings are left undisturbed for a week; the stitches are then removed and passive motion begun.

The joint fringes vary within wide limits. The smaller are reddish-grey to purplish in colour, of delicate dendritic appearance, attached to the joint surfaces by an extremely slender and delicate pedicle. At the other extreme are the large, irregular and coarsely-lobulated, yellowish, fatty masses 4 to 5 cms. in diameter, often glued by constant inflammation to the synovial lining over a wide area. The authors say both conservative and operative treatment give good results in suitable cases; the difficulty is to select the cases.

Reference.—[1] *Med. News*, vol. lxxxiii. p. 973.

**ASPHYXIA (Traumatic).** *Priestley Leech, M.D., F.R.C.S.*

This condition is an extremely rare one. Beach and Cobb[1] report a case where microscopic examination of the skin was made; they have only been able to find other six cases reported in surgical

PLATE 4.

TRAUMATIC ASPHYXIA.

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literature. The patient was a large, muscular German, thirty years old. An hour before admission he had been caught and held by a moving freight elevator; the elevator was stopped and the man released in from three to five minutes; it was stated by observers that while being released his face became black, and blood ran from his nose and mouth, and his eyes protruded; he was unconscious for a few minutes after being released. Over the abdomen were several skin contusions, and the eighth and ninth ribs on the left side were fractured, and there was a hæmatoma in the left loin. Examination of the heart and lungs was negative. The appearance of the eyes and face are shown in *Plate IV*, (reproduced by permission from *Annals of Surgery*). On inspection, the skin seemed to be dotted with countless spots, from black and reddish-black to blue in colour, very close together, while between the spots were lines or areas (very minute) of normally-coloured skin; these latter spots were plainest at the line of the hair on the forehead, and close to the normal skin on the neck. The line of demarcation on the neck in front was sharp, the transverse line running through the inner ends of each clavicle. At the back of the neck the double triangle of the trapezius muscle was marked out very clearly, *i.e.*, there was no discoloration of the skin outside the confines of this muscle. The retinæ showed no hæmorrhages (in Burrell's case there were retinal hæmorrhages). The conjunctivæ bulged forward prominently, because of extensive hæmorrhages underneath; the pupils were equal, and reacted to light. The patient recovered, and was not very ill except on the third day, when his temperature rose to 106° F. He had laboured breathing, slight bloody expectoration, and both lungs were full of râles, but this all passed away in twenty-four hours. The discoloration disappeared rapidly after the third day, apparently simply fading out; the areas of normal skin between the dark spots became larger and wider, and three weeks later the patient's face seemed almost normal, having only a slightly suffused appearance. The subconjunctival hæmorrhage went through the usual chemotactic changes seen in the absorption of any blood-clot, but in the face there were no pigmentary changes.

The gross cause of this condition was forcible compression of the chest extending over some minutes, accompanied by entire cessation of respiration. This peculiar discoloration of the face has long been noted as present in individuals pressed to death in struggling crowds or mobs. In this case two pieces of skin were removed from the discoloured area, and microscopic sections showed normal skin; there were no signs of blood in the tissues outside of the blood-vessels. The writers believe that the coloration is due to stasis from mechanical over-distension of the veins and capillaries, with or without paralysis, from engorgement of, or pressure on, sympathetic nerves. As to the cause of the sharp limitation of the colour to the head and neck, they

adopt the theory of Perthes, which ascribes it to the lack of valves in the jugular and facial veins. The treatment is the immediate resort to artificial respiration and the use of oxygen ; the secondary treatment, apart from combating shock, is symptomatic.

Reference.—[1] *Ann. Surg.* April, 1904.

**ASTHMA.** *Wilfred J. Hadley, M.D., F.R.C.S.*

Pathology.—Writers on this subject have mainly borne out Brodie and Dixon's conclusions (reviewed last year), that the attack was due to spasm of the muscular walls of the small bronchioles. Sihle[1] also draws attention to the low-tension pulse, and enlarged and tender (congested) liver so often observed in cases of asthma. He concludes that the tendency to asthma comprises : (1) A tendency to spasm of the bronchi (increased tone of bronchial muscle) ; (2) A tendency to vaso-motor insufficiency (diminished tone of the circulatory muscle) ; (3) A tendency to fluxionary hyperæmia of the respiratory mucosa ; and (4) A tendency to abnormal secretion of the respiratory and bronchial mucosa.

Dealing with the nerve mechanism of the attack, he places the centrifugal path in the motor, secretory, and vasomotor fibres of the vagus. The centripetal path is more difficult to trace, but he thinks that the olfactory, trigeminal, and vagus all act in this capacity, leaving it doubtful whether other cerebral and the spinal nerves are capable of doing so ; whilst he hazards the suggestion that the centre may be situated in the solitary bundle. He concludes that one must also recognize the important part played by the brain (especially the cortex) in the production of asthma.

A. T. Wilkinson[2] regards asthma as an exaggerated protective reflex, causing bronchial spasm, directed against certain things, noxious to the asthmatic, but not to ordinary persons. He points out that three of the reflex methods, devised by nature to prevent the introduction of noxious substances by the respiratory tract, come into play, *viz.*, sneezing, increased secretion, and spasm. It is a pathological idiosyncrasy, often inherited.

Treatment.—Wilkinson (*op. cit.*) lays great stress upon the necessity of careful search for the cause. Whilst admitting that this may be in the brain, or stomach, or, in fact, almost anywhere, he believes that in the vast majority of cases it will be found in the respiratory tract, usually coming from outside the body, and will prove to be local or "aerial." He is convinced that such a cause exists in almost every case, and quotes many cases of idiosyncrasy with regard to animals, *e.g.*, cats, dogs, monkeys, horses, birds (especially when moulting), etc. He acknowledges the importance of the treatment of the nasal passages in many cases, but thinks that a great number return to the physician after temporary relief. He also quotes some cases which were worse after removal of polypi, which more or less

completely blocked the nose. This result he thinks due to the re-establishment of nasal breathing, enabling the specific cause (whatever it might be) to come more readily into contact with the nasal mucous membrane. Speaking of drug treatment, he advises the use of some **Aerial Antispasmodic,** with warm applications to the chest, as most beneficial for the attack itself; whilst he recommends, too, the continual use of **Arsenic** and **Potassium Iodide** as likely to prevent or lessen the number of attacks. All such measures of treatment, however, he frankly regards as only temporizing, and the whole paper is a plea for more careful search for the etiological factor. This found (and he gives many practical instances of the way in which it may be gradually discovered by process of exclusion), its removal is generally attended by the complete cure of the case.

Sihle (*op. cit.*) strongly recommends **Morphia** for the treatment of the attack itself, or, as it may be wiser not to use it, suggests such derivatives as **Heroin, Codeine,** and **Dionin.** The low-tension pulse he combats by the use of **Digitalis,** choosing the infusion. He acknowledges the value of **Iodine** as a preventive. Finally, he recites some examples of the value of treatment by suggestion, in certain forms of asthma which have defied all other treatment.

References.—[1]*Wien klin. Woch.* No. 4, 1903; [2]*Med. Chron.* Jan. 1904.

**ATROPHY OF OPTIC NERVE.** (*See* Optic Atrophy.)

**BERI-BERI.** *J. W. W. Stephens, M.D.*

Durham[1] investigated beri-beri in Christmas Island and the Malay Peninsula. While the outcome of his researches was negative in respect of finding the cause, yet he contributes many interesting points, and criticizes many current views with justice. He observed that: (1) The well-to-do (*well-fed*) escaped the disease, while if the diet is barely sufficient or insufficient among a class, it is that class it attacks; (2) Beri-beri is not rife in towns; it is from the mining camps that cases come; (3) Cooks or those on kitchen staffs, even in gaols, habitually escape; (4) It is amongst *rice*-eaters in contradistinction to *wheat*-eaters that beri-beri occurs, yet many of the Chinese (the better class) escape, though eating the so-called dangerous kind of rice; the author considers, however, that food and beri-beri are in some way linked together; (5) All attempts to infect monkeys failed; (6) Clinical symptoms: (*a*) A faucial redness, with tender or enlarged glands, is observed in early cases; (*b*) An exaggeration of the knee-jerk often precedes the loss of it; (*c*) Tenderness of calf muscles is a rare symptom. (7) Epidemiology: (*a*) The disease seems to be determined by contact, direct or indirect; (*b*) The person attacked is in some way connected with the spread of the disease; (*c*) The greatest beri-beri mortality occurs during the first six months of residence. (8) Relation to rice: Though all the rice-eaters on Christmas Island obtained the same rice, yet it was only the coolies that suffered.

Mosse[2] records an outbreak of beri-beri among the Boer prisoners of war in St. Helena. Though beri-beri is seen in the civil hospitals in St. Helena in sailors (mainly Norwegian) who have put in there, yet it appears that these cases were in no way responsible for the outbreak, but that it was imported among the Boers themselves. It did not spread to the English troops who were camped near at hand. The dirty habits of the prisoners were mainly responsible for the epidemic. Their food was "practically the same" as that of the troops. The disease did not spread when the entire camp was removed to fresh ground. Also it was observed that individual patients improved rapidly when removed to new ground. If these facts are correct, the importance of food as an agent would seem to be minimized. Some of the clinical features of the disease were: (1) The enormous size to which legs and scrotum often swelled with anasarca; (2) The sudden appearance and disappearance of œdema, *e.g.*, in twelve to twenty-four hours; (3) No albuminuria; (4) Rapid recovery of ataxic cases.

REFERENCES.—[1]*Jour. of Hyg.* p. 133, 1904; [2]*Jour. R.A.M.C.* p. 243, 1904.

**BLADDER (Diseases of).** *E. Hurry Fenwick, F.R.C.S.*

Bartrina[1], after calling attention to the fact that **Adrenalin** is a stable crystalline compound 625 times more active than suprarenal extract, which with chloretone acid forms a chloride of adrenalin, states that it is his practice to use the drug in the following combination:—

| | | | |
|---|---|---|---|
| ℞ Adrenalin chloride | 1 part | Normal solution of sodium chloride | 1000 parts |
| Chloretone | 5 ,, | | |

The addition of chloretone is for the purpose of accentuating the anæsthetic power of the adrenalin. This solution, if kept from the light, remains without alteration indefinitely, and can be sterilized by boiling without any modification of its active principles or its physiological properties. Bartrina considers one of its most useful applications is the diagnosis of the source of blood in the urine. Thus, if after a vesical instillation in case of hæmaturia the urine remains clear, it is evident that the blood must have been of vesical origin. Moreover, even a temporary hæmostasis is of great service in making cystoscopic examinations. Albarran especially prepares his patients for such examination by the instillation of 20 to 30 drops of 1–1000 adrenalin solution into the membranous and prostatic urethra, passing the cystoscope five or ten minutes later, and thus avoiding the slight bleeding which the introduction of this instrument so often causes.

Bartrina also believes in using adrenalin in the treatment of urethral strictures. In cases of narrowing so tight as to make the passage of even a filiform quite impossible, it will be found that five or ten minutes after an instillation of adrenalin chloretone, small instruments can be introduced without difficulty.

All these points have been several times exhaustively treated and insisted upon by various writers, notably by Professor A. von Fisch[2].

*Cystitis.*—As a result of many investigations, it can be seen that cystitis, like other suppurating processes of the genito-urinary tract, is generally caused by the bacillus coli communis found in the intestines. These bacilli can exert no influence in the normal bladder; but when congestion, or retention of urine occurs, the resistance of the bladder to infection is diminished, and a favourable soil for the growth of these micro-organisms is provided. One of the chief difficulties in grasping this subject has been that each of the many workers at the subject of cystitis has given a separate name to these germs.

*Exstrophy of the Bladder.*—Orloff[3] has performed **Maydl's operation** in four cases of exstrophy of the bladder. The first was that of a boy, twelve years old, with complete exstrophy, dilatation of the ureteric orifices, and a separation of the pubes of four centimetres, combined with double inguinal hernia. After implanting the vesical orifices of the ureters into the bowel, the rectal sphincter was cut, and two large drainage tubes were passed into the rectum. This patient perished two years later of a double pyonephritis, in the meantime having been able to retain his urine during the day, but suffering from nocturnal incontinence. The second patient, seven years old, was under observation for eighteen months, during which time he was able to hold his urine during the day. The third patient, three years old, a girl, perished of peritonitis (probably due to the incomplete suture), five days after operation, which could not be completed on account of the weakened state of the child. The fourth patient, twenty-four years old, died less than three weeks after operation, of an ascending infection.

It will be remembered that Maydl's operation consists in mobilizing the segment of bladder into which the ureters open, removing all of the mucous membrane of this viscus excepting this segment, and implanting the latter into the sigmoid, thus preserving the ureteral sphincters, and preventing ascending infection.

Orloff has collected fifty-six cases of Maydl's operation. In eleven cases death has resulted within twenty-one days: four of them of peritonitis, two of pneumonia, one of anæsthesia, and one of acute anæmia. As to the functional results, the operation causes no irritation of the intestines, and the anal sphincter remains competent. In some cases there is nocturnal incontinence. Five of the forty-five cases which recovered from operation died of ascending infection. From this it seems as if this complication, invariable after the older forms of direct ureter transplantation, is the exception rather than the rule. The operation is elaborate and time-consuming, requiring between two and three hours for its completion. The post-operative period is subject to many complications. Exceptionally it runs a smooth course, but even under such circumstances, some renal colic and albuminuria are noted. In seven cases a fæcal fistula was formed, requiring in three a second operation for closure. In six cases pneumonia developed. In one case there was phlebitis affecting the leg.

*Cystoscopic Examinations in the Female.*—John A. Sampson, M.D., resident Gynæcologist, Johns Hopkins Hospital, advocates the **Sims posture** in cystoscopy in preference to Kelly's elevated dorsal or knee-breast positions. The editor of this section can endorse this opinion, having used the position in private practice for some years. The method Dr. Sampson employs is as follows :—

1. The patient's bladder must be empty.

2. The patient assumes the Sims posture on the table, or if very ill, on the bed, *i.e.*, she lies on her left side with both knees and thighs flexed and the right thigh drawn well up above the left ; her left arm should be back of her, either hanging over the edge of the table or lying on it, parallel with her back. Her chest should be inclined forward so that she rests upon it. The buttocks must be at the edge of the table or bed. The pelvis is tilted forward and at the same time elevated. The effect of the tilting forward of the pelvis with elevation is that the pelvic contents tend to fall out, and so we have the same conditions present for atmospheric distension of the bladder, vagina, and rectum, as in the knee-breast posture, only not as great. In many instances, further elevation of the buttocks is not required.

3. First, place a speculum or spatula into the vagina and let that channel dilate. This is very important, no matter whether the patient is examined in the Sims or knee-breast posture. The dilatation of the vagina keeps the trigonum of the bladder from dilating backward when the bladder is examined, and so permits a much better inspection of it.

The urethra is now exposed, a few cc. of a 10 per cent solution of cocaine is injected, the canal dilated if necessary, and the cystoscope is inserted. On removing the obturator the bladder will dilate, and its entire mucosa can be examined as in the knee-breast posture.

REFERENCES.—[1]*Ann. des Mal. des Gen.-urin.* No. 11, 1903 ; [2]*Wien klin. Woch.* No. 31, 1902 ; *Ann. Surg.* Nov. 1902 ; [3]*Ann. des Mal. des Gen.-Urin.* No. 11, 1902.

**BLINDNESS.** (*See* AMBLYOPIA.)

**BLOOD, (Examination of).** *Prof. A. H. Carter, M.D., F.R.C.P.*

Geo. Oliver[1] has submitted the results of interesting and valuable observations on the circulation of fluid between the blood and the tissues. He finds that if the red cells be counted in a drop of blood obtained under ordinary circumstances from the finger-tip, and repeated after thorough compression of the finger by an indiarubber ring, a considerable increase will usually be observed in the latter case as compared with the former. The difference is due to the fact that lymph fluid, which escaped with the blood in the first instance, is expelled by the pressure of the rubber ring. Corresponding differences were found in the hæmoglobin percentage and the specific gravity of the blood. The extent of such differences serves as a trustworthy index of the amount of lymph-fluid in the tissues at the time of the observation.

By a series of these observations he has been able to establish definite

and regular fluctuations of lymph-fluid under certain conditions. Thus, under ordinary circumstances, just before a meal, no lymph-fluid will be found, but it quickly appears afterwards, reaches a maximum one hour later, and then steadily declines to zero. This is accompanied by corresponding fluctuations in the blood-pressure, in the respiratory exchange between the blood and the tissues, in muscular contractility, and in the flow of gastric juice. He further finds that the lymph flow is notably influenced by the nature of the food taken. Thus it is not affected at all by cold-water, carbohydrates, fats, gelatin, pure proteids, sugars, or pepsin. Chloride of sodium increases it, while potassium chloride diminishes it. Again, meat extractives (such as creatinine, carnine, and xanthin), uric acid, ammonium urate, and glycogen, increase it, while ammonium hippurate, and Witte's peptone greatly diminish it. Creatin and hypoxanthin produce first a fall, and afterwards a rise. Tea, coffee, cocoa, and all other purin bodies raise the blood-pressure and increase the lymph-flow; the same is observed with regard to brandy, wines, and beers.

He also works out the behaviour of the lymph-flow in exercise, fatigue, rest, sleep, the respiration of certain gases, variations of temperature, etc. He concludes that there is a periodic circulation of fluid between the blood and the tissues outside the vessels, and indicates certain practical deductions derived from observations with regard to it. There is no doubt (as the author states) that by studying the conditions which increase or decrease lymph effusion, we ought to gain a clearer insight how to control derangements of nutrition and metabolism. The original paper deserves careful study.

*Character of the Blood in Infancy.*—Hutchison[2] selects this subject, together with disorders of the blood and blood-forming organs in early life, for the Gulstonian Lectures of 1904. He points out that the red cells are in excess at birth, with a corresponding excess of hæmoglobin. Both rapidly diminish during the first fortnight of life; but while at that time the proportion of red cells becomes practically stationary, the hæmoglobin continues to diminish till it reaches a minimum of about 70 per cent at six months of age. This rapid hæmolysis has much to do with the production of icterus neonatorum. For a short time after birth, a few nucleated red cells may be found. From the fourth month till birth, the red cells may originate from the liver and spleen, as well as the bone-marrow; but afterwards, from the bone-marrow alone. The leucocytes are the same in kind as in the adult, but at birth they are more numerous, owing to an absolute increase of polynuclears. During the first week, the total number of leucocytes shrinks to half of the original number; but meanwhile there is a progressive increase of lymphocytes. From this point up to the sixth month these steadily rise; but after this age the lymphocytes slowly diminish, until about six years of age, when the proportions characteristic of adult life are reached. It is the relative poverty of

hæmoglobin, together with the predominance of lymphocytes, which constitutes the most striking feature of the blood in early life. Moreover, the rapid early specialization of the two great blood-forming structures—the bone marrow and adenoid tissue—renders the young child specially liable, under the stress of unfavourable conditions, to lapse into fœtal types of blood formation. The lecturer proceeds to discuss the abnormalities of the blood under the following heads: (1) Congenital abnormalities; (2) Primary anæmias; (3) Secondary anæmias; (4) Blood disorders associated with enlargement of spleen; (5) Leukæmias; and (6) Affections of adenoid tissues. Under these heads the reader must consult the original paper, as it is too full of detail to be conveniently abstracted.

*Blood in Malignant Disease.*—Cunliffe[3], as the result of a study of the blood in various cases of cancer, concludes: (1) That the most constant and characteristic feature is a diminution of the hæmoglobin percentage; (2) That the red cells are normal in number in early, small, and slow-growing cancers, but are decreased in rapidly extending growths, especially where metastases are occurring in other parts; (3) That the number of leucocytes is increased as a rule, especially in cachectic forms and where there are metastases. The increase is generally in the polymorphonuclear cells. A relative increase of polymorphonuclears, even in the absence of leucocytosis, he considers to be suggestive of cancer. Myelocytes are found in advanced cases, but only in small numbers. (*See also* INSANITY, BLOOD CHANGES IN.)

*Specific Gravity.*—Hammerschlag's method of determining the specific gravity of the blood by suspending droplets in varying mixtures of chloroform and benzol of known density, has been generally adopted as the best for clinical purposes. With a view of testing its accuracy Baumann[4] made an experimental enquiry, and finds that though the results are uniform and reliable, they are invariably too high, but the excess is practically constant, namely, ·012.

*Bacteriology of Blood.*—Rosenberger[5] emphasizes the importance in all bacteriological examinations of blood, of careful attention to technique, with the object of securing practically aseptic conditions. *Post-mortem* examination cannot be relied on, and the results are apt to be very misleading. His paper contains much practical information on the subject.

Much has been written on hæmatology during the past year which cannot be referred to in detail within the space at our disposal. The following papers may be mentioned for reference: "Leucocytosis and Lymphotosis in Malignant Disease," by Bushnell[6]; "Chronic Cyanotic Polycythæmia, with enlarged Spleen," by Osler[7]; "The Influence of Complicating Diseases upon Leukæmia," by Dock[8]; "New Methods of Blood Examination, with some indications of their Clinical Importance," by Wright[9]; "Report of three cases of Splenic Anæmia," by Scott[10]; "An Experimental Study of the Relation of

Cells with Eosinophile Granulation to Infection with Trichina spiralis," by Opie[11]; and "Cold as a causal factor in the Blood changes due to High Altitudes," by Weinziri[12].

References.—[1]*Lancet*, April 30 & May 7, 1904; [2]*Ibid*, May 7, 1904; [3]*Med. Chron.* Sept. 1903; [4]*Brit. Med. Jour.* Feb. 1904; [5]*Amer. Jour. Med. Sci.* Aug. 1903; [6]*Brit. Med. Jour.* Sept. 12, 1903; [7]*Ibid*, Jan. 18, 1904; [8]*Amer. Med. Jour.* April, 1904; [9]*Lancet*, Jan. 23, 1904; [10]*Amer. Jour. Med. Sci.* March, 1904; [11]*Ibid*; [12]*Ibid*, Aug. 1903.

**BOILS.** (*See* Furunculus).

**BRADYCARDIA.** (*See* Stokes Adams' Disease).

**BRAIN (Surgery of).** *Wm. Thorburn, F.R.C.S.*

*Localization and Anatomy.*—Pye-Smith[1] reports two cases of cerebral tumour which he removed. Both tumours occurred on the right hemisphere, and both caused symptoms of left hemiplegia. One, however, was limited behind by the fissure of Rolando, and occupied the ascending frontal convolution, but the other was limited in front by the fissure of Rolando, and occupied therefore the ascending parietal convolution Ferrier, Beevor, and Horsley obtained evidence of some representation of movement in the ascending parietal convolution in their experiments on the orang, but Sherrington and Grünbaum failed to localize any movement in that convolution in the chimpanzee. It is interesting, therefore, to note that of Pye-Smith's cases, the one in which the tumour was removed from the ascending parietal convolution now has the left limbs as strong and useful as those on the right side, although he has attacks of cramp on the left. The case in which the tumour was removed from the ascending frontal convolution did not regain much power on the paralysed side. So far as they go the cases thus agree with the conclusions of Sherrington and Grünbaum.

Harman and Bradburne[2] record a case of bullet wound of the left hemisphere in which both the site of the injury and a reproduction of its course upon the cadaver showed that the cortex posteriorly to the Rolandic fissure must have been completely cut off. In this case hemianopsia was combined with very slight paralysis (early right hemiplegia having quickly passed away), and this case is also brought forward as showing that the ascending parietal convolution, which was probably cut off, plays little part in the innervation of movement.

Adamkiewicz[3], from experiments which he has been conducting since 1900, concludes that the true centres for voluntary movements lie in the cerebellum, and not, as is generally held, in the cerebral cortex. He locates nine centres on the same side of the cerebellum as the movements which they represent;—that is, a head centre, a trunk centre, and seven centres for the extremities. He describes a separate centre for each extremity, one for both arms acting together, one for both legs, and one common centre for all four limbs.

Pagano[4] also states that he can, by stimulation of the cerebellum, elicit movements even after extirpation of the cerebral motor centres.

He therefore holds that the influence of the cerebellum on the cord is a direct one, and not, as formerly stated by him, through the intermediation of the cerebral cortex of the opposite side.

*Technique.*—Cushing[5] advocates the use of a pneumatic tourniquet in osteoplastic resection of the skull and other surgical operations. He considers that it is much to be preferred to the strong rubber tubing commonly employed. The ordinary elastic tourniquet is difficult to apply properly to the head, and in one of Cushing's cases produced a pressure neuritis of both supra-orbitals and one suboccipital nerve. As much larger areas of the cerebral surface are now exposed than in former times, the question of hæmorrhage from the scalp requires more attention. Hæmostatic forceps are very much in the way where the surgeon has only a limited space in which to work in the bone-cutting stage of the proceedings, and after the reflection of the bone flap, the weight of the forceps is also apt to strip away from the bone the soft parts, on which it depends for its blood supply. "The possibility of paralysis, the difficulties of observing the best technique during the application, removal, and especially the re-application, and the pain when no general anæsthetic is administered, are all familiar drawbacks to the common form of elastic tourniquet." The instrument consists of a hollow rubber tube, adjusted to the head and made taut by inflation with air.

*Injuries.*—Rawling[6] describes minutely the mechanism of fractures of the skull. He holds that direct fractures of the base are much more common than is generally believed. With regard to the older theories of the mechanism of basic fractures, he comes to the following conclusions: (1) That the bursting and compressing theory and the contrecoup theory are both untenable; (2) That Aran's irradiation theory, with certain modifications, accounts satisfactorily for those basic fractures which result from blows on the vertex; and (3) That most basic fractures result from forces applied directly around the basic level, and that these fractures are the result of a splitting force, the line of fracture tending to travel across the base, parallel to the original direction, but not necessarily in the same straight line. (Aran's theory is that fractures of the base result from severe vault fractures, the fracture following the shortest anatomical route to the base.) Rawling states, however, that in many cases where the injury is inflicted at or near the level of the base, a basic fracture by direct violence results, and that the vault may or may not be fractured. He also states that the fracture does not follow the shortest anatomical route to the base, but that the line corresponds to the direction of the initial force, and is markedly influenced by the resistance offered to it in its basic course, picking out, usually, all the weaker spots and avoiding the stronger.

Rawling places the mortality of basic fractures at 44 per cent, which is about 10 per cent higher than that of previous observers,

the mortality of vault fractures being from 20 to 25 per cent. He found hæmorrhage from the middle meningeal artery very much more common than is generally supposed, and as the fissures running across the tegmen tympani are usually of such a nature that blood can be forced through them into the middle ear, he regards profuse and continuous hæmorrhage from the ear as very suggestive of an extradural hæmorrhage. For basic fractures with compression, and for basic fractures without compression, but pointing to a fatal termination, he suggests that where there is no obvious compressing agent, such as a middle meningeal hæmorrhage or a foreign body, etc., the cerebellar fossæ should be trephined as low down as possible, and a drainage tube inserted. He finds that the amount of fluid in the cerebellar fossæ is always markedly increased.

Crisp English[7] has studied the after-effects of head injuries in a series of 300 cases. These he divides into three equal series of 100 cases each, *viz.* : (1) Fractures of the skull ; (2) Concussion, contusion, and laceration of the brain ; and (3) Miscellaneous. The observations were made a year or more after the injury.

In the cases of fracture he found that 31 per cent presented no after-effects, 50 per cent slight effects, and 19 per cent serious effects, such as mental impairment, traumatic epilepsy, and other conditions which prevented the patient from working. In the second series he found 48 per cent with no ill-effects, 42 per cent with slight effects, and 10 per cent seriously incapacitated. He dwells strongly on the fact that the results are often much more serious than is generally supposed, and urges especially the necessity for more prolonged early treatment, and for more frequent trephining in fractures of the vault without apparent depression. He then discusses very fully the symptoms and treatment of the various conditions which are apt to supervene on head injuries, dwelling especially upon persistent headache, traumatic insanity, and traumatic epilepsy (*infra* p. 163).

With regard to the treatment of cephalalgia and its associated mental disturbances, he comes to the following conclusions : (1) In rather more than half of the cases cure may be brought about by medical measures : prolonged mental rest and the proper administration of mercury are the essential points ; (2) In a few of the cases the symptoms are mainly due to chronic osteosclerosis, and such cases may be almost certainly cured by trephining ; (3) In the remainder of the cases the symptoms are more persistent, and do not yield to general measures or to the removal of thickened bone only. He believes that in such cases these symptoms are the reflex result of lesions or irritations of the dura mater ; and if the injury has involved the vault of the skull, cure can be effected promptly by excision of the thickened or adherent dura mater, and removal of any other source of irritation which may be present.

On the question of traumatic insanity, he concludes as follows :—

1. Whilst some degree of mental impairment is comparatively common after injuries to the head, the changes are seldom sufficiently marked to be included under the heading of insanity.

2. Insanity may result from injury to any part of the head.

3. Traumatism leads to insanity in two ways: (*a*) Direct insanity due to the actual injury to the brain or its membranes, apart from hereditary or other predisposing causes; and (*b*) Indirect insanity—that is to say, any form of insanity occurring as the result of lowered resistance of the brain due to injury in patients with a predisposition to insanity, hereditary or otherwise.

4. Every variety of mental change may be produced by traumatism, although some forms are more common than others.

5. It is at present undetermined whether injury to the prefrontal region is more likely to be followed by mental disturbances than injuries to other parts of the brain.

6. Only a small proportion of the cases of traumatic insanity are open to relief by operation, for which a localizing indication in an accessible region must be present.

7. The results so far have been encouraging, and although the operation must necessarily be exploratory, it is fully justified in suitable cases, especially in face of the otherwise hopeless condition of these patients.

Cushing[8] has made some experiments upon animals, which seem to prove that the high arterial tension observed in acute cerebral compression is designed by nature for the purpose of maintaining an adequate circulation of blood in the vital centres in the medulla, since, if the high arterial tension is not maintained, the pressure inside the skull causes so much anæmia of these parts that they soon become exhausted and paralysed. He has also made observations on patients suffering from acute cerebral compression. During the stage of high arterial tension ophthalmoscopic examination showed the retinal veins to be tortuous and distended. He explains these phenomena as follows: "A circulatory condition in the medulla which borders upon anæmia has the effect of stimulating the vasomotor centre. Thus a rise in blood-pressure is occasioned which restores the local circulation. The extent of this rise may be taken as an indication of the degree of advancement of the compression. Beyond a certain point, however, this reaction cannot take place. The vasomotor centre under these circumstances fails, and the respiratory efforts cease entirely." In Cushing's view, therefore, the respiratory failure, which is well known to take place before cardiac failure in cerebral compression, is to be explained by a preceding failure of the vasomotor centre. For years it has been considered that this high-tension pulse was an evil rather than a blessing, and many patients suffering from cerebral apoplexy have been bled freely, with the object of diminishing the blood-pressure, and in this way diminishing the quantity of blood

which was being extravasated through the ruptured vessel; this Cushing regards as an error. Quite recently Stephen Paget has recorded two cases of recovery, after venesection in impending death from traumatic cerebral compression.

Rochard[9] recommends **Lumbar Puncture** as a therapeutic measure in cases of cerebral injury, where, besides causing mechanical compression, the hæmorrhage, acting as a foreign body, has caused a leucocytosis which has markedly increased the tension of the cerebrospinal fluid. He claims that it is of great value in cases of chronic meningo-encephalitis, in which, in addition to mental trouble, there is severe headache. He states that this headache is not relieved by any other method of treatment, but quickly disappears after the withdrawal of a varying quantity of cerebrospinal fluid.

*Epilepsy.*—Crisp English[7] found 21 cases of epilepsy in his series of 300 cases of head injuries, and of these 7 were of the Jacksonian type. In two-thirds of the cases, therefore, the epilepsy which followed was of the idiopathic variety, and for these mental shock is largely responsible. At present he believes that permanent cure is out of the question, and that all we can expect is to afford to the patients relief for a few years. The fits certainly seem to recur sooner or later, but in some cases long periods of relief are obtained. The confidence in the curative value of brain operations in epilepsy has very much diminished in recent years. Many cases have been reported as cures, even within a few months of operation; but, in view of the proof that the convulsions may recur even after many years, these reports are very misleading, and raise false hopes of permanent cure. Even, however, when the fits recur soon after operation, surgical interference may, and does very often, reduce their frequency and severity. It is, of course, essential to continue **Bromide Treatment** after operation.

Hopkins[10] reports five cases of **Bilateral Excision** of the superior and middle cervical sympathetic ganglia, in which the operation has given relief. The symptoms resulting from the operation and continuing permanently, are ptosis, contraction of the pupils with paresis, lowering of the tension of the eyeball, and recession of the globe. The functions of the cervical sympathetic are to control the cerebral blood-vessels, to transmit impulses from the stomach, intestine, and lungs, and to innervate the dilator muscles of the pupils (and also the unstriated muscles of the eyeball). For the operation it is claimed that the removal of the sympathetic nerves thus keeps the cerebral vessels dilated, and prevents the transmission of impulses from the viscera, and is therefore necessarily of value in reflex epilepsy.

*Tumours.*—Woolsey[11] has collected statistics of 101 cases of cerebral tumour which have been operated on and reported during the past five years. In four cases astereognosis was included in the symptoms, and in a few cases reported lately this symptom has proved most

valuable in localizing the tumour before other localizing symptoms have made their appearance. Persistent headache was absent in 11 cases. Optic neuritis was absent in 26 per cent of the cases under forty years of age, and in 44 per cent of those over forty years of age. Vomiting was present in 33·3 per cent, and vertigo in 22·2 per cent of the cases. Local tenderness on pressure or percussion over the tumour was noted in 21 cases. With regard to the effect of operation, in 16 cases the symptomatic result was so good as to be considered a cure, and in 41 the improvement was nearly a cure.

Schwarz[12] considers that the progress of surgery renders possible an attempt to remove any tumours which are outside the pons varolii. In attempting a differential diagnosis between intra- and extra-pontine tumours, he states that conjugate deviation of the eyes, resulting from invasion of the sixth nucleus, provided always that the symptom is an initial one, so that pressure may be excluded, makes it certain that the lesion is in the pons itself. The presence of involvement of several cranial nerves, fifth, sixth, seventh, and eighth, as initial symptoms, makes it very probable that the growth commenced outside the brain substance. Schwarz considers that the absence of the reflex of the pupil to light is a certain indication of intra-pontine disease. He explains this by the work of Bach and Wolff, who have shown that the reflex arc is made up of fibres running from the anterior corpus quadrigeminum to the upper part of the spinal cord, the efferent fibres being in the posterior longitudinal bundle.

References.—[1]*Quart. Med. Jour.* Aug. 1903; [2]*Lancet*, May, 1903; [3]*Neurol. Centr.* No. 12, p. 546, 1904; [4]*Riv. di Patolog. Nerv. e Ment.* p. 209, May, 1904; [5]*Med. News*, Mar. 1904; [6]*Hunter. Lect.* 1904; [7]*Ibid*: [8]*Amer. Jour. Med. Sci.* June, 1903; [9]*Presse Méd.* April 30, 1902; [10]*New York Med. Jour.* Mar. 1904; [11]*Amer. Jour. Med. Sci.* Dec. 1903; [12]*St. Peters. Med. Woch.* No. 35, 1903.

**BREAST (Cancer of).** *Priestley Leech, M.D., F.R.C.S.*

Butlin[1], in a lecture on the predisposing and pre-cancerous conditions of the breast, says there are three causes (apart from diseases of the nipple and areola) occurring in the substance of the mammæ, which predispose to, or precede, cancer of the breast; they are: (1) Innocent tumours; (2) Duct-cysts; (3) Chronic mastitis, with or without the presence of cysts.

1. *Innocent Tumours.*—In cases of fibro-adenomata there is no doubt that the transformation into cancer has occurred, and it is undesirable to leave such tumours indefinitely on the ground that they are harmless, and Butlin would always advise their removal within a certain period.

2. *Duct-cysts.*—In at least two instances he has seen the development of cancer in connection with duct-cysts, and these should be removed when they are small.

3. *Chronic Mastitis* is probably by far the most common predisposing cause of cancer of the breast. There may be obvious cysts present or not. There are many lumps formed as the result of chronic

mastitis, which appear to be quite solid, but which, when they are cut into, are found to contain cysts, and a microscopic examination will often discover very tiny cysts which would have escaped observation without the microscope. Butlin has serious doubts whether glandular cysts are not in every instance produced by inflammation. Chronic inflammation of the breast is generally spoken of as if it belonged to and were confined to the connective tissue of the breast, but it is very rarely the case that the glandular epithelium is not involved, and sometimes the stress of the inflammation seems to have fallen on the glandular apparatus.

The tangible signs (for they are not often visible) of chronic mastitis are either indurations or cysts, or a combination of the two. It is often impossible to be sure as to the diagnosis of chronic mastitis; it is more common in women at and after the climacteric period, and yet it may occur at any period of adult age, and even also in girls between puberty and adult age, but this is rare. Its appearance is not limited to the puerperal period, but it occurs with tolerable frequency about the time of the cessation of the catamenia. Hence the frequent occurrence of cysts of the breast at this period of life; hence the name of involution cysts of the breast, since the cysts are regarded as in some manner connected with the involution changes which are natural at that period. No cyst of the breast is a natural occurrence, and should not be so regarded. Chronic mastitis may attack one breast, and may there form a single tumour or many indurations; or it may attack both breasts, either separately or at the same time; and it may attack the same breast at different times.

Diagnosis.—The best hints (and Butlin says he can give no more than hints) are: Indurations due to chronic mastitis are much more often multiple than cancers are; they are much more frequently associated with perceptible cysts; they are much more likely to affect both breasts; and they are much more painful than cancer in an early stage. In chronic mastitis the patient's attention is drawn to the breast by pain, while cancer is in nine cases out of ten discovered by accident. He does not think dimpling of the skin ever occurs with mastitis, but the axillary glands are frequently enlarged; the enlargement is often limited to a single palpable gland, and the gland is not fixed, and is at the most firm, but not hard.

The actual signs of the pre-cancerous stage are no more than a little greater hardening, a little less mobility, and perhaps the smallest suspicion of dimpling of the skin, if the lump is not too deeply seated in the breast. Chronic mastitis need not become cancerous; it may disappear, or it may become quiescent.

Treatment.—The rules to be followed are: Chronic mastitis, whether single, or multiple, may be treated in young women by **Strapping.** The strips of strapping should be long and broad, and should be carried from near the spine, round the wall of the chest

over the whole of the affected breast, to above and below the other breast. The pressure should be firm and equal, but not painful. Tumours which are probably due to chronic mastitis, but which exhibit doubtful signs, especially if they are single and occur in women of more mature age, should be **Incised** without delay to determine at once their nature. Tumours due to chronic mastitis which are not cured, or very decidedly the better for treatment, should not on any account be left indefinitely. Butlin generally allows six weeks, not longer, sometimes not longer than a month, for treatment to be successful; and if at the end of that time it is not successful **Operation** should be done. He thinks that removal of the affected parts of the breast, keeping well outside the disease, is generally sufficient for cases of suspicious chronic mastitis.

R. Clement Lucas[2] draws attention to two very interesting cases of what he terms "corset cancer" in women. One of them was in a single woman, forty-seven years of age, who worked in a fur factory, and for many hours each day she was scraping rabbit-skins, and so moving her arm backwards and forwards, her pectoral muscle moving to and fro, whilst she leaned over the bench, pressing the soft tissues injuriously against the upper edge of her corset. The other case was in a woman, unmarried, aged fifty-seven, who had been employed in a laundry for thirty-six years carrying the iron backwards and forwards each day. In both cases a lump was present on the axillary margin above and to the outer side of the right breast, just where the edge of the corset rubbed against the pectoral muscle. Both tumours were removed, and both were carcinomata.

Watson-Cheyne[3] draws attention to the need of removing at least the sternal portion of the great pectoral, and if the glands are much enlarged, also the smaller pectoral muscle; the axillary vein should be lifted up at the apex of the axilla, and the fat and glands behind it removed, and the glands and fat above and behind the vessels and nerves. Any marked enlargement of the clavicular glands renders the case inoperable, but if in clearing the axilla, diseased glands are found high up where the vein leaves the axilla, he thinks it is as well to clear out the glands in the posterior triangle of the neck. As regards results, in 34 private cases of cancer of the breast operated on from six to thirteen years ago, 17 are alive and well without any recurrence; 1 case could not be traced; in 14 cases recurrence has taken place, and of these 13 have died from the disease; 2 died from some other disease without any recurrence. However the results are worked out, we get 50 to 55 per cent alive and well after operation, after periods varying from six to thirteen years. It is impossible to prophesy the result, as several cases which seemed limited and small, and which were regarded as hopeful, have recurred; while others which were thought to be practically hopeless have shown no further sign of disease. Second operations have been very rare, being

performed in only three cases. local and operable recurrences being very rare after the modern operation. From a study of recurrences Cheyne has come to the conclusion that cancer in its early stage in a healthy body grows extremely slowly, and that it is only in the later stages, where the resistance of the body is broken down, that the more rapid growth occurs. In the matter of internal recurrence. there is no marked difference between the results given by the old and the new methods of operation.

Dr. Betton Massey[4], of Philadelphia. reports a case of carcinoma of the mamma (microscopical examination of the growth) which was treated by massive **Mercuric Cataphoresis.** No recurrence took place in twelve months, the patient's health improved. and she gained weight. Further experience is needed before this method can be recommended in place of operation in suitable cases.

MacNaughton Jones[5] reports a case of isolated duct carcinoma in the axillary gland; previous sections had not exhibited any malignant characteristics. The breast was then cut into different sections, and from six different portions which were examined the following results were obtained from different sections: (*a*) Some of the ducts atrophied, with shrunken and degenerated epithelium; (*b*) Numerous small cysts produced by involution changes in the ducts; some of these are filled with epithelial *débris*; (*c*) Fibrous processes lined by epithelium project into some of the above cysts; none of them are branched. but they constitute an early stage of intracystic papillomata; (*d*) The epithelium in some of the dilated ducts has proliferated, and is arranged in layers several cells in thickness; this indicates an early carcinomatous change, and accounts for the secondary deposit of cancer found in the enlarged left axillary gland. This proves that examination of one or two sections may give negative results. carcinoma being yet present in the deeper portions.

Dr. Clark Stewart[6], of Minnesota, discusses atrophic scirrhus of the breast. He describes sections from three cases of adenocarcinomata of the breast, which might easily have been diagnosed as scirrhus, and would invariably be so diagnosed if the old dictum of cutting sections for diagnosis from the advancing edge of the tumour were followed. The advancing edge of a growth often presents scirrhous characteristics in some fields, and this may be true even of infiltrating sarcomata; therefore, in order to make a correct diagnosis, the older and central portions of the tumour must be studied. These three cases of adenocarcinomata were all exceedingly chronic in their clinical course, all presenting an advancing edge which simulated true scirrhus. His conclusions are: (1) The term atrophic scirrhus is worthy of retention as describing an important clinical entity; (2) It is extremely doubtful whether such cases are benefited by operation; (3) Certain adenocarcinomata of the breast have the clinical history of the atrophic scirrhus, and it seems probable that

if more of these tumours were studied histologically they might prove to have an adenomatous element to justify their comparative benignancy.

In marked contrast to Butlin's views are those of Robert Abbe[7], of New York, who believes that mammary cysts are innocent, and most of them may be cured by a simple aspiration.

C. R. Keyser[8] records five hitherto unpublished cases of cancer of the male breast. The differences between these and cancer of the female breast are: (*a*) Age from twelve to ninety-one years, the average age being 61·5 years, which is higher than in women; (*b*) The right breast is more frequently affected in men, the left in women; (*c*) The average duration of the disease is longer in the male; (*d*) Ulceration is present in a large proportion of cases, and the growth frequently starts round the nipple. A history of injury is very often obtained in men.

C. H. Leaf[9] discusses the clinical causes of cancer of the breast, and concludes that it is invariably due to a combination of causes, the chief of which are: (*a*) Errors of lactation; (*b*) Injury; (*c*) Family history of consumption; (*d*) Worry and anxiety; (*e*) Residence in damp localities.

Mr. Sampson Handley[10] points out that the invasion of the lymphatic plexus of the deep fascia by breast cancer is not an embolic process, but the cancer actually grows along the deep fascial plexus, like a water-weed along a network of irrigation channels, filling them up. This process, to which subcutaneous and osseous metastasis were, in his opinion, secondary, might ultimately extend in a centrifugal manner to the greater part of the surface of the body, sparing only the distal portions of the limbs. The abdominal viscera are not infrequently infected from the deep fascial plexus by direct infiltration of the abdominal wall in the epigastric region. From the operative point of view the aim should evidently be to remove as widely as possible a circular area of the deep fascia, centred on the primary growth: thus the deep fascia should be removed as far down as a line running 3 inches below the tip of the ensiform cartilage. The axilla should be opened by turning forward a flap of skin with its base along the lower edge of the pectoralis major. The growth itself should be circumscribed at a safe distance by an annular incision with a linear prolongation downwards along the linea alba, so as to allow of the removal of the deep fascia of the epigastric region.

Ellis[11] reports a case of cystic degeneration of the mamma, showing transformation into scirrhous carcinoma, and he mentions that Greenough and Hartwell[12] have examined a series of thirty cases of the same disease (which they call chronic cystic mastitis), and they conclude that "the danger of the transition of chronic cystic mastitis to adenocarcinoma is sufficient to make the removal of the entire gland advisable in all but very early and slight degrees of the affection."

The operation they advise is the subcutaneous resection of the entire gland, without removal of the nipple.

M. Denucè[13] called attention to some observations of Trélat in 1883, who stated that the presence of small multiple nævi on the skin of a breast affected with tumour, was an indication that the tumour was malignant. Denucè says they are also to be met with in the integuments in the proximity of deeper tumours of the abdomen and pelvis, particularly ovarian new growths, and when their appearance has coincided with the detection of the tumour or has followed it, they may be considered as a probable sign of malignancy.

Malapert and Morichau-Beauchant[14] report a case of angioma of the breast in a girl aged twelve years. Angiomata of the breast may be either cutaneous, subcutaneous, or intraglandular; the presence of cysts seems to point to a retrogression of the tumour. They are all of congenital origin, and appear at or soon after birth.

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**BREAST (Tuberculosis of).** *Priestley Leech, M.D., F.R.C.S.*

Caminiti[1] reports a case of primary tuberculosis of the breast. He thinks not more than fifty clear cases have been published, the majority occurring in women and in early life. Traumatism, suckling, and pregnancy play a certain part as predisposing causes. Infection occasionally takes place by the milk ducts, but more commonly by the blood-vessels and lymphatics. Not infrequently it begins in the axillary glands and passes thence to the breast, and in these cases a rosary of glands may be felt passing from the axilla to the breast. The prognosis is good if the disease is limited to the breast and glands, which should be freely removed. Morestin[2] reports another case.

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**BRIGHT'S DISEASE.** *Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

The surgery of nephritis continues to be vigorously advocated by Edebohls and his supporters. In a recent article[1] he speaks of the operation as having passed beyond the experimental stage, and being indicated in all cases of chronic Bright's disease. He regards all varieties of chronic nephritis as suitable, and claims to have cured more cases of chronic interstitial nephritis than of diffuse or parenchymatous nephritis. The main contra-indications are: (1) Age; he does not regard this as a very serious objection, but thinks in patients over fifty years of age the prospects of the operation are not so good as in younger persons. (2) Changes in the heart and blood-vessels; here also he does not convey the idea that he regards these conditions

as serious contra-indications, for he speaks of having cured a case which was suffering from chronic Bright's disease "with enormous hypertrophy of the heart." It is only where the heart is dilated and weak that the contra-indication is valid. (3) Retinitis albuminurica; this he does appear to regard as a decided objection, for out of the nine patients with this condition upon whom he has operated, not one has survived.

His attempt to explain the good effects of the operation is not very successful. He adopts the expression of a lay writer, that "with the help of the surgeon the kidneys take off their coats and go to work in their shirt sleeves." He maintains that chronic Bright's disease is not always a bi-lateral affection, and says that recent investigations have justified his former statement to this effect; but we doubt if it has been shown that unilateral nephritis ever occurs as the result of toxic and general conditions: it is only in ascending nephritis that it is unilateral, and this is not what is generally regarded as chronic Bright's disease. Castaigne and Rathery[2] found bi-lateral nephritis to be the absolute rule in acute and chronic infectious diseases, and in acute intoxications, as by corrosive sublimate; and the results of clinical and pathological experience were confirmed by experiments on animals. He speaks of the operation as being free from danger and almost a certain cure, and urges its performance before the health of the patient is broken down and the case becomes hopeless. He claims to have operated upon 72 cases during the last twelve years, of whom 47 survived. Of these he reports that 21 are cured, and the others improved.

Walker Hall and Herxheimer[3] criticize these operations from the pathological standpoint. They have experimented upon a number of rabbits, and find that when the capsule is removed from healthy kidneys it re-forms early, and at the end of from ten to twenty-one days the kidney is covered by a new fibrous envelope thicker than the original capsule. In the new capsule they were unable to find any marked formation of new blood channels. They produced artificial nephritis by injections of neutral ammonium chromate, which caused intense acute nephritis, and they subjected 17 of the animals to decapsulation on both sides, and 8 on one side. The result of the operation was not to cause any favourable modification of the inflammatory changes. They think that there is no anatomical basis for the operation, and consider the most reasonable explanation of its favourable results is that made by Pel, Jaboulay, and others, that the improvement is due to the action upon the sympathetic ganglia; but if this be so, they consider Mr. Reginald Harrison's operation of puncturing or incising the capsule is a more reasonable proceeding.

At last year's Vienna meeting of the Naturforscher, Stern[4] said he had tried Edebohls' operation of decapsulation in one case of chronic nephritis without success, but he spoke with great satisfaction of the

immediate relief he had been able to give in a case of nephralgia by splitting the capsule. He had found the method of great use in hæmaturia without stone, an opinion we know to be shared by many English surgeons; however, Rehn sounded a note of warning by stating that he had tried it in several cases of hæmaturia without good result, the patients in every case becoming worse after the operation.

Prof. Dieulafoy[5] has described in a clinical lecture a condition which he calls *appendicular albuminuria*, or appendicular toxic nephritis; in other words, an infective inflammation of the kidneys resulting from the absorption of toxins. This nephritis often escapes observation owing to the absence of obvious symptoms, more especially of œdema. He thinks that in all cases of appendicitis, the urine should be examined, and that the presence of albuminuria indicates toxic absorption. He uses these facts mainly as an argument against the expectant plan of dealing with these cases.

The consensus of medical opinion is undoubtedly in favour of **Less Strict Diet** in Bright's disease than was formerly the practice. In acute and sub-acute nephritis, and in acute exacerbations of chronic nephritis, it is no doubt necessary to keep to milk diet, and from these acute conditions the change to a varied diet must be gradual; but it is now generally admitted that the persistence of albuminuria is no reason for maintaining a milk diet. H. Koester[6] has carefully studied 100 cases, and his results are to confirm the modern view. He has seen albumin diminish when meat has been substituted for milk, while in other cases it was unaffected. The amount of albumin does not appear to be influenced by the quality of the meat, whether it is what is ordinarily called butcher's meat, poultry, or fish.

In the treatment of Bright's disease great stress is still laid by Widal and Claude[7] and others on the influence of chlorides in the production of œdema. They think a milk diet owes its advantages to the small quantity of chlorides contained in it; as when 10 grams of chloride of sodium were added daily to a milk diet, dropsy occurred, while, on the other hand, dropsy could be made to disappear upon a diet of raw meat, bread, and potatoes, which had been deprived of its chloride of sodium. (*See* CHLORIDES, p. 13).

G. Daremberg and F. Moriez[8] insist upon the importance of fish, not merely as a substitute for other forms of animal food, but as being a positively beneficial article of diet.

Baccelli's treatment[9] of acute nephritis consists essentially in early **Bleeding** from the foot, a restricted diet, and the free administration of **Distilled Water.** The amount of blood withdrawn is 300 cc. or more for an adult, and proportionately less for a child; the bleeding may be repeated as often as four times; the blood is taken from the foot on the ground that the greater the distance from the organ the greater the relief afforded it. The treatment is said to be useless if delayed until the epithelium has been destroyed.

**Lumbar Puncture,** which was recommended by Guillian and Marie three years ago (*see Medical Annual*, 1902, p. 174) for obstinate uræmic headaches, is recommended by Dr. D. C. McVail[10] for the treatment of *uræmic coma*, on the ground that the cause is probably cerebral œdema with increased intracranial pressure. He relates two cases of uræmic coma treated successfully by this means, but it is noteworthy that in both cases the fluid fell only in drops, which is not what we should expect if the theory of intracranial pressure were true. In spinal puncture for meningitis, where there is an undoubted increase of cerebrospinal fluid, the fluid spurts out with a forcible jet, showing the tension under which it was retained. Although the results were good in these two cases, it does not therefore seem certain that the relief was due to diminished intracranial pressure.

Widowitz[11] has administered **Urotropin** in 102 cases of scarlatina, with the idea of preventing the occurrence of nephritis. It was prescribed in doses varying from ¾ to 7½ grs. according to the age of the patient, three times daily during the first three days of the disease, and then discontinued until the beginning of the third week, when it was given for a second three days. No case of nephritis occurred, although according to various estimates he says it usually complicates 16 to 90 per cent of all cases. He admits, however, that albuminuria was present as a trace in the most severe cases for the first few days of the disease. According to the Metropolitan Asylum reports, 14,889 cases were treated during 1902 with a percentage of 5·36 of nephritis[12]. It is evident that the number of cases treated by Widowitz was too small to allow of any conclusion to be drawn in a disease which varies so much in its virulence as scarlatina. While over-estimating the frequency of nephritis, he has failed to give any satisfactory definition of its occurrence. From the observations of Stephenson Thomson[12] at the Glasgow Fever Hospital, slight nephritis is so common that whenever there is albuminuria it is almost certain that there is some degree of nephritis, although there may be no other clinical symptoms. The preventive treatment of Widowitz is based upon the theory that the nephritis is caused by a micro-organism, which urotropin excreted as formaldehyde would destroy, but it is quite as likely that the inflammation is set up by toxins which would be unaffected by the antiseptic.

References.—[1]*New York Med. Jour.* May 28, 1904; [2]*Sem. Méd.* p. 273, 1902; [3]*Brit. Med. Jour.* April 9, 1904; [4]*Med. Press*, Sept. 28, 1904, p. 324; [5]*Ibid*, Nov. 4, 1903; [6]*Nord. Med. Arkiv.* xxxvi. 4; [7]*Sem. Méd.* p. 219, 1903; [8]*Ibid*, p. 300; [9]*Il Policl.* Feb. 1904; [10]*Brit. Med. Jour.* Oct. 24, 1903; [11]*Wien. Med. Woch.* Oct. 1, 1903; [12]*Med.-Chir. Trans.* vol. lxix.

**BRIGHT'S DISEASE (Surgical Treatment).** *E. Hurry Fenwick, F.R.C.S.*

The *Medical Annual* of 1903 and 1904 contains a full description of Edebohls' operation for the relief and cure of Bright's disease. Edebohls and his followers maintain that decapsulation of the kidney is necessary in this disease, for the establishment of a new and active

cortical circulation by means of which the diseased cells of the uriniferous tubules are regenerated and their functional activity increased. Sufficient time has now elapsed since the publication of the original paper in 1901 to enable operators in all parts of the world to test and criticize the method. The literature falls into two sections: (1) The value of the operation in relieving patients, regardless of the cause for the relief; (2) Criticism of the hypothesis that a new and active circulation is supplied to the kidney by the decapsulation.

1. *Does the Operation relieve true chronic Bright's Disease?*—This is best answered for the practitioner by careful consideration of cases, from sources which seem unbiassed. The best and most complete case is by Primrose of Montreal.[1] He records it thus:—

"A boy, ten years of age, came under my care in the Hospital for Sick Children in November, 1901, suffering from chronic nephritis. The history of the onset of his illness was obscure, but for six months before he came under my observation he had general anasarca and ascites. During that time paracentesis abdominis had been performed seven times. On admission to the hospital the urine contained 1·5 per cent of albumin, the abdomen was enormously distended with fluid, and there was great swelling of the face and œdema of the extremities. Paracentesis abdominis was performed, and 180 oz. of fluid drawn off. The urine, in addition to albumin, contained numerous hyaline, granular, and epithelial casts.

"On November 21st I cut down on the right kidney in the loin and found it much enlarged. I made an incision two inches long through the capsule, and subsequently drained the lumbar wound for a fortnight. As a result of the operation, the amount of urine secreted in twenty-four hours gradually increased from 14 ounces before the operation to 40 ounces on the seventh day after the operation, whilst the percentage amount of albumin diminished from 1·6 to 0·8 per cent. The child's condition did not continue to improve, however, and it appeared that permanent relief of symptoms had not been secured. One was encouraged by the profound effect produced upon the condition of the patient by the simple operation upon the right kidney of splitting the capsule, and it was therefore thought justifiable to perform a more extensive operation upon the left kidney. Accordingly, on the 20th December, 42 days after admission to the hospital, I cut down upon the left kidney, and removed the capsule in its entirety. The child was critically ill for some days subsequently, and unfortunately contracted pneumonia towards the end of the first week after the operation. We despaired of his life, but he gradually recovered from the pneumonia, and the renal symptoms underwent a most remarkable abatement, so that whilst the amount secreted in twenty-four hours rose to 44 ounces, the amount of albumin diminished to 0·03 per cent, in fact there remained little more than a mere trace of albumin, and the casts were also very largely diminished in number. The general

œdema vanished, and the ascitic fluid was reabsorbed and disappeared. Shortly after this the child left the hospital in apparent good health, having gained remarkably in weight, and looking the picture of robust health. He remained in excellent health without any medicinal treatment or restriction of diet until a year and nine months after operation.

"He was readmitted on September 21st, 1903. one year from the date of his previous discharge, with an acute attack of nephritis. He complained of pain in the back, and had swelling of the legs, puffiness of the face, and some ascites. He passed 25 oz. of urine in twenty-four hours, containing 0·1 per cent of albumin and 2·5 per cent of urea. He was freely purged, and put on a milk diet, with normal saline rectal injections and hot stupes. He responded promptly to the treatment, so that in a few days the œdema and ascites disappeared ; the albumin remained about the same. For two months there was not much alteration in his condition. The percentage amount of albumin varied from 0·056 to 0·220 per cent. He was discharged from the hospital on November 14th, 1903.

"A fortnight afterwards he had another attack, and was admitted to the hospital for the third time, with a relapse presenting general œdema, and other symptoms as in the previous attacks. It was thought now, that as the right kidney had previously been operated upon by splitting the capsule, and not by decapsulation, possibly some further benefit would be derived from decapsulation on the right side. Accordingly, on December 11th, 1903, two years after the first operation, I cut down on the right kidney, the capsule of which I had previously split. The peri-renal fatty capsule appeared normal, and was dealt with in the usual way. The postero-external margin of the kidney was found adherent to the posteriorabdominal wall by an adhesion as thick as the little finger, and of very firm consistence. The adhesion was so firm that the kidney substance was torn in the effort to free it The capsule was then stripped off as far as the pelvis, and the greater part of it snipped off by means of scissors. The kidney was enlarged, one would say about half as large again as normal ; it did not, however, appear to be tense within its capsule. Within a week all signs of œdema had disappeared, and the patient's general condition appeared good. The urine, however, contained about 1 per cent of albumin."

Dr. E. Wyllys Andrews[2] has reported four cases, as follows :—

Case I.—A man, thirty-two years of age, in moderate health otherwise, who had had for some years chronic interstitial nephritis. His urea averaged about 7·10 per cent. There were hyaline casts. Double decapsulation was performed, following which there was a decided improvement in the total amount of urine as well as the total solids, and for a period of two or three weeks thereafter the urea went above 1 per cent, and remained between 1 and 2 per cent, while the casts were

about the same. There was a small amount of albumin. The subsequent history was that the urea was again reduced. There were two or three score careful urinalyses made of twenty-four hour specimens. The case was watched carefully, and to the best of the operator's knowledge, nearly eighteen months after the operation, there was very little change for the better, nor yet was the patient much worse.

Case II was a young man, twenty-seven years of age, in comparatively good health, but who had chronic interstitial nephritis. Careful urinalyses showed that he had constantly averaged only about ½ per cent urea; a moderate amount of casts being present. Last May or June he decapsulated the kidneys, and, as in the first case, a very promising result appeared to be obtained at first. The urea line went up above 1 per cent. sometimes 2 per cent, and stood there for a little while; but the operator was much disappointed to learn some months afterwards that patient's urea had dropped again to the old percentage. The man had been six months before, and six or eight months after the operation, constantly on the strictest diet. While the patient reported himself as robust and feeling well, as a matter of fact his urinary findings were about the same.

Case III was a child, nine years of age, who had severe, well-advanced chronic parenchymatous nephritis. The patient had been watched for some years; the symptoms had slowly but progressively grown worse. Anasarca was extreme; his eyes, forehead, neck, and chest were markedly œdematous, as well as the lower limbs. Albumin varied from ½ to 2½ per cent; urine rather scanty, and the case was apparently a desperate one, although there was never any bad heart action, and there had never been any coma. The child's condition precluded general anæsthesia with ether or chloroform. Under spinal cocainization, however, he had no difficulty whatever in making the decapsulation. The operation was done in September. A slightly favourable influence was at first apparent; the albumin diminished in quantity, remaining at about 1 per cent; casts remained numerous; urea was fairly good; there was never at any time the slightest improvement in the anasarca. Patient remained in the hospital three or four weeks, then went home. After the fourth week the albumin again increased in quantity. After five weeks the patient had the former amount of albumin and, if anything, a smaller quantity of urine. He was dropsical, and could hardly be moved. He considered it a case not improved by the method.

In Case IV the operation was done two months ago. It was a mixed case of intermittent hydronephrosis and unilateral nephritis. There was relief from all of the kidney symptoms by combined nephropexy and complete decortication of one kidney. Formerly, the urine was frequently full of blood, with a good many casts. There were intermittent distention, pain, and albuminuria, all of which symptoms had been entirely relieved. The operator considers that it was likely

the nephropexy, and not the decortication, did the work. [It will be noted in the last case that there was probably mobility of kidney, surgical nephritis and pain. The editor has always contended that these cases should not be allowed to bias the question, for they are not true medical nephritis, but localized traumatic or infective nephritis.—E. H. F.]

Dr. A. J. Ochsner[3] also contends that we must look upon cases of nephritis as forming two distinct classes, which have nothing to do with each other, so far as the disease itself is concerned, with the exception of certain symptoms In the one class we had healthy kidneys, one of which had been injured mechanically. This class was discussed by Edebohls in his first paper. In the other class, with systemic cause or causes, the conditions were entirely different. These kidneys did not possess the conditions necessary for permanent recovery

On reading through the literature. no such distinction as the above is made, and Guiteras[4], of New York, has apparently included examples of both classes in his resumé of 120 operations. This seems to vitiate his conclusions, which are as follows:—

"Some patients recover and have perfect health for months or years after the operation, usually those whose cases are diagnosed as chronic interstitial nephritis and movable kidney, in which one kidney is operated upon. In a great many cases the œdema persisted after the operation. The urine was normal in a number of cases after the operation, principally in those of movable kidney. It would be interesting, however, to know what is meant by the statement that the urine is 'perfectly normal'; whether it means that there are no pathological manifestations in it, such as albumin and casts, or whether it also includes a normal percentage of solids, urea, chlorides, etc. The urine was improved in other cases, as shown by the albumin and casts disappearing, although the excretion of urea, chlorides, etc., was about the same; in other cases albumin and casts still persisted, though less marked. A great many patients showed no improvement in the urine.

"The best results have been obtained in cases of movable kidney, in which albuminuria and cylindruria or other symptoms of Bright's disease were present, but disappeared after decapsulation and fixation of the movable organ. It would seem therefore that the operation upon its non-movable mate should consequently not be performed, as had been advocated by some operators. In other cases in which both the movable and non-movable organs show symptoms of Bright's disease, these signs often disappear after the movable kidney has been decapsulated and fixed. If they do not after a reasonable time, the second kidney can be operated on."

The statistics of 120 cases sufficiently well reported to allow of computation show 16 per cent cured, 40 per cent improved, 11 per cent unimproved, 33 per cent deaths.

These statistics are tabulated in the tables following the article. In cases of interstitial nephritis the results often appear brilliant, as the albumin and casts disappear from the urine, but the amount of solids excreted may remain the same. The mortality in chronic interstitial nephritis was 26 per cent ; in chronic parenchymatous, 25 per cent ; in chronic diffuse, 75 per cent.

"Death after the operation may be due to any of the following causes : Exhaustion, uræmic coma, œdema of the lungs, acute dilatation of the heart, asthenia, apoplexy, uræmia, and heart failure, exacerbations of chronic nephritis sometimes occurring after the operation as a result of cold and exposure, heart failure, collapse, general purpuric extravasation coming on during the operation, and myocardial thrombosis. Death from uræmia may occur from a few days to several weeks after the operation. Some patients had acute pyelitis after the operation, while others had surgical diseases of the kidney, so-called, when operated upon. In order to understand cases better before and after operation, separate urines should be obtained by ureteral catheterism or segregation."

Without considering the weakness of the premise upon which decapsulation is based, Bakes[5], who has had favourable experience of decapsulation for the treatment of chronic nephritis, goes further afield for a fresher blood supply, and is of opinion that the replacement of the denuded kidney in a structure so defectively vascular as the fatty capsule is a weak point in the operation. He has, therefore, considered the possibility of bringing the kidney after decortication into close contact with some structure within the peritoneal cavity that is freely supplied with blood, with the object of establishing a fresh and active vascularization of the diseased renal organ. This object, he thinks, may be attained by one or other of two new methods which he has practised on the cadaver.

In the first of these methods the kidney, after its fibrous capsule has been stripped away, is enveloped in a portion of omentum drawn through a wound made in the parietal peritoneum, and secured by sutures.

In the second method, which is named intraperitoneal dislocation of the decorticated kidney, the organ is passed through a wound in the peritoneum into the abdominal cavity, and fixed there between the attached portions of the mesenteries of the small and the large intestine, the margins of the peritoneal slot being stitched around the renal hilus.

The choice of method would, it is pointed out, be determined by the size of the kidney and by the condition of the omentum. If the latter structure be atrophied and short, intraperitoneal dislocation would be the only practicable method. The author has recently practised the first method, that of omental inclusion, on the living subject, with promising results. In this case, although the diseased

kidney was very large, the operation was not attended by any difficulty. On account of such tentative experimental work, and of these attempts to improve a cortical circulation, it is necessary to report some of the criticisms upon the supposed *modus operandi* of decapsulation, and to examine the evidence upon this cortical circulation.

2. *Is the Hypothesis of the new and active cortical circulation correct ?*— The view is controverted by the results of experiments by Dr. Harold A. Johnson, of San Francisco[6]. He decapsulated the kidneys of ten dogs, and examined the kidneys at various dates after the operation. The dogs remained perfectly well so far as health was manifested by appetite, strength, and playfulness. These studies went to show that there is gradually formed a *new capsule*, sometimes thinner but more often thicker than the original. There was sometimes an infiltration of round cells and a proliferation of intertubular connective tissue, but in no case was there any considerable anastomosis between the renal and peri-renal vessels.

Dr. Emil Ries[7] has performed decapsulation in one case for hæmaturia, and had finally to remove the kidney. He found the newly-formed capsule around the kidney was about as thick as one's little finger, and very firmly attached all around, so that it would have been difficult to remove the kidney with the capsule ; but it was easy to detach the capsule from the kidney itself and remove the kidney. From the kidney removed over 600 sections were made. He had stained and examined every one of these sections, and among the 600 sections there was but one single anastomosis, and this anastomosis was near a strip of connective tissue which followed the path made by him in the first operation with his finger, which he inserted into the pelvis of the kidney. Even this was not a direct anastomosis of kidney tissue, but was a vessel in the scar tissue. In the rest of the sections examined there was not a solitary anastomosis. The 600 sections were taken from various parts of the kidney ; and this experiment, if one wished to call it such, on the human body, proved conclusively that the theory of the *modus operandi* of this operation, to wit, that it was due to anastomoses forming, was incorrect. He wished to say, however, that the fact that the theory was incorrect did not prove that the treatment was incorrect, or unsuccessful.

Dr. J. M. Vancott, of Brooklyn, describes the renal circulation very minutely. He points out that three-fourths of the blood supply passed anteriorly, and that the supply was distinctly an end-artery system. From this consideration of the renal circulation it was concluded : (1) That the arteries were terminals having nowhere any direct communication with each other, the only possible communication being through the capillary system ; (2) That all of the vessels varied systematically in diameter in certain locations, thus definitely affecting the blood-pressure in various parts of the organ ; (3) That with the exception of a few of the interlobular arteries and a few

arteries entering the cortex, the only communication was capillary. Therefore, by decapsulation the delicate parenchyma of the kidney was subjected to loss of nutrition and to alteration of pressure and reversal of the current in the vessels of widely varying diameter, conditions commonly found in connection with renal infarction. Litten's experiment had demonstrated that the collateral circulation was not sufficient to restore the equilibrium of the circulation in the kidney after decapsulation. The stripping of the capsule completely cut off what little peripheral circulation was derived from the capsular arteries. Summing up all the facts, the conclusion was reached that very little could be expected from the renal collateral circulation when the main supply of blood was compromised. It had been shown that regeneration of the parenchyma of the kidney did not occur, the repair always taking place in the usual way, *i.e.*, by cicatrix. Vancott points out further that when the capsule was torn away, the vessels that should renew the circulation were torn away also, so that nothing could be done in the way of restoring the circulation except by capillary anastomosis. It had also been forgotten that there must inevitably be death of considerable areas of the cortical parenchyma, because renal epithelia die two hours after being deprived of their blood supply, while four days were needed to produce new capillaries. The operation of Edebohls totally disregards the fundamental principles held regarding chronic diffuse nephritis, for this disease was merely the local expression of a general condition. Where the kidney had been dislocated or pressed upon, it was easy to see how good might be accomplished by removing the abnormality, and so improving the circulation of the kidney. No amount of restoration of renal circulation could restore the integrity of the cortex. Drs. Vancott and Murray had made a series of laboratory experiments on cats, and these experiments showed that decapsulation worked only positive injury to the normal kidney, and was of no benefit to the large white kidney.

Newman[8] has never seen any such new formation of blood-vessels in kidneys which have been decapsulated,. At first the capillary circulation in this new cellular connective tissue is very active, but no new vessels of any size form, and within a comparatively short time it becomes converted into dense fibrous tissue.

[Criticism by Editor.—I have operated on *bona-fide* chronic nephritis, with the usual initial good results, but am not yet satisfied that the improvement is permanent. I agree with Tyson "that cases of parenchymatous nephritis are more favourable for operation than cases of interstitial nephritis, although Edebohls' cases include twenty-nine of the latter variety, and twenty-two of the former. It is reasonable, however, to expect earlier and more complete repair in parenchymatous nephritis, since there is not so much actual destruction of vessels as simple compression. They can therefore more readily resume their natural calibre and admit the circulation of blood through

them, whereas in interstitial nephritis, especially if advanced, there is more complete obliteration of the kidney tissue. Moreover, the capsule is stripped off with much more difficulty in interstitial nephritis, often dragging some of the substance of the organ with it, while in parenchymatous nephritis the capsule strips off easily. Thirdly, it is not reasonable to expect results as satisfactory where there are extensive cardio-vascular changes. These once established are permanent."

With an experience of nearly 500 operations upon the kidney, I may perhaps offer my very decided disapproval of the advice given by extremists to perform under every condition and for every condition, decapsulation of the kidney. I consider such a procedure binds the kidney in a cuirass of tough connective tissue, which prevents its normal breathing function; by that I mean its expansion and contraction, and that its life is depreciated. It renders, moreover, any secondary operation upon the kidney most difficult and hazardous; and in no section of surgery is a second operation more often called for than on an inflamed kidney. It is wrong in theory, for I do not find vascularization of the new capsule; and in the tough kidney of interstitial nephritis positively dangerous.—E. H. F.]

References.—[1]*Montr. Med. Jour.* May, 1904; [2]*Ann. Surg.* April, 1904; [3]*Ibid*; [4]*New York Med. Jour.* Nov. 14, 1903; [5]*Centr. f. Chir.* No. 14, 1904; *Brit. Med. Jour.* May 28, 1904; [6]*Ann. Surg.* April, 1903; [7]*Ibid*, April, 1904; [8]*Brit. Med. Jour.* April 30, 1904.

**BRONCHITIS.** *Wilfred J. Hadley, M.D., F.R.C.S., F.R.C.P.*

There is but little to say about this common complaint. Writers recognize that many cases have a microbic origin. The constant presence, in health, of micro-organisms in the nose and mouth which, under circumstances of lowered resisting power in the mucous membrane, are undoubtedly able to cause bronchial catarrh, would account for many cases apparently due simply to chills or exposure; whilst the very common occurrence of bronchitis in the course of certain diseases, such as measles, etc., may be accounted for in the same way.

Treatment.—This has moved on old, well-established lines, but the reviewer feels that a warning is necessary lest such treatment should degenerate into mere (often harmful) routine. It must be remembered that there are very different pathological conditions at the different stages through which a particular case may pass. For instance, the treatment applicable when the mucous membrane is turgid, swollen, and dry, is often likely to do harm when the tubes are flooded by secretion. The writer has seen great danger produced by the indefinite, indiscriminate, and injudicious use of steam kettles, stimulating expectorants, and so forth, when the patient is already nearly drowned in his own expectoration. It is well to remember that no harm can result from repeated careful examinations of the

chest; indeed, the necessary changes of position, percussion, etc., often do good; and so rapid are the changes in some cases (especially of children), possibly necessitating equally rapid changes in treatment, that it is imperative to make repeated physical examinations and to carefully avoid blindly following routine.

**BURNS.** *Priestley Leech, M.D., F.R.C.S.*

Capurbano[1] uses a solution of **Tannin in Glycerin** for the local treatment of burns and scalds. A 50 per cent solution is used, and the glycerin must be pure. The bullæ are punctured, and gauze soaked in the solution is applied. The solution is applied several times in the day without the removal of the gauze, until the new epidermis is formed and the gauze falls off. In burns of the third degree the destroyed tissues are removed, and the gauze and solution applied in the same way.

REFERENCE.—[1]*Gaz. deg. Osped.* Sept. 13, 1903.

**CACHEXIAL FEVER.** (*See* LEISHMAN'S BODIES.)

**CALABAR SWELLINGS.** *J. W. W. Stephens, M.D.*

Habershon[1] states that almost every European at Yakusu, Upper Congo, suffers from irregular and intermittent swellings on the arms, legs, and occasionally on the face. In one case a ring-like swelling and enlargement encircled the arm. These swellings are thought to be due to the presence of *F. loa*. In many of the cases the swelling is preceded by a burning pain. There is no œdema associated with it.

Wurtz and Clerc[2] found in a case of *F. loa* a marked eosinophilia of 53 per cent. I have myself found in a case of "tropical swellings," said to be different from Calabar swellings, an eosinophilia of 50 per cent. It would be well to record the blood counts in Calabar and other swellings, as some light may be thrown on their pathology in the absence of any worm, adult or embryo.

Kerr[3] records the finding of *F. diurna* in the blood of a patient suffering from Calabar swellings. He supports Manson's view that the swellings are provoked by the discharge into the connective tissue of her embryos by a parental *F. loa*.

REFERENCES.—[1]*Jour. Trop. Med.* Jan. 1904; [2]*C.R. Soc. d. Biol.* p. 1704, 1904; [3]*Jour. Trop. Med.* July 1, 1904.

**CALCULUS (Renal).** *E. Hurry Fenwick, F.R.C.S.*

Infusion of **Birch Leaves** has been recommended by Winternitz as a bland diuretic. Jaenicke[1] states that its diuretic action is unimportant, but that it is a good solvent of renal calculi. He gives a somewhat inconclusive case, for he relies on the patient's own statement and upon radiography, both of which are not without elements of weakness. In one case an eminent surgeon had decided to operate, and the presence of calculi had been demonstrated by radiography (*sic*). For two years the man had had pain in the left side, which radiated downwards to

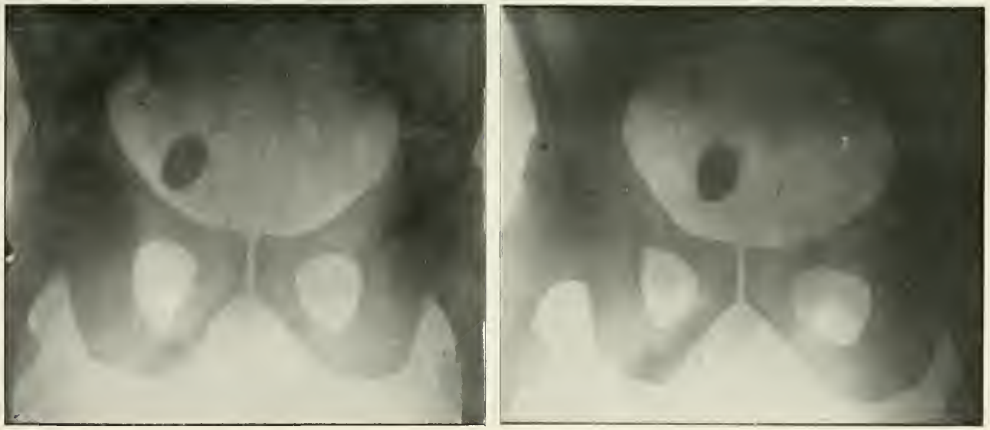
the sacrum and forwards to the thigh. The urine became turbid, and there was occasional hæmaturia. Treatment by mineral waters and drugs was useless. Later, renal colic appeared. Before consenting to an operation the patient consulted the writer. About 35 oz. of urine were passed in the twenty-four hours. It was acid, turbid, yellowish-white, and occasionally hæmorrhagic. On standing a grey or reddish-grey sediment appeared, which consisted of pus cells, urates, renal epithelium, and a few hyaline casts. There was from 3 to 5 per mille, albumin. A cupful of infusion of birch leaves was ordered to be taken twice daily, and **Liq. Ferri Perchlor.** was given to combat the hæmorrhage. A generous meat diet, with sometimes a small amount of wine, was substituted for one which consisted chiefly of milk. Six weeks later the general condition had improved, the attacks of colic were less severe and less frequent, and the strangury was scarcely noticeable. The condition of the urine was practically unchanged. But after another six weeks the general condition was excellent. No severe attack of colic had occurred for some time, and the urine was in all respects normal. There was neither pain nor strangury, and the patient could go for long walks without inconvenience. He has remained in good health ever since (about nine months). A radiograph recently taken gave no indication of renal calculi. The patient stated that after he had taken the "tea" for some time the stone began to be dissolved, and was passed in the urine in fragments, some of which were of the size of peas. Later only rough sand was passed. He gained 12 lbs. in weight.

The birch leaves should be collected early in summer and dried. A heaped teaspoonful of the powdered leaves is infused for five minutes in about 9 oz. of boiling water. The infusion is then boiled for five minutes and strained. This quantity is freshly prepared and taken twice daily, before breakfast and at 5 p.m. It should be taken continually for six months, and then during alternate months for some time. The writer claims to have cured many cases of renal calculi by this means.

### X-Rays in Renal and Ureteric Calculus.

Much has been written on **Renal Radiography,** and the profession are apparently divided into those who, having failed to obtain evidence of calculus by radiography, not necessarily expert work, condemn the procedure as useless; and those who recognize that all methods of research must have limitations, and that renal radiography is no exception to this rule. Most progressive urinary surgeons admit that the method is of infinite and exact value in certain cases. This opinion is well illustrated by the beautiful stereoscopic picture of a ureteric calculus, which Mr. Mackenzie Davidson has permitted me to reproduce (*Plate V*). The patient, a gentleman of 63, had suffered agonizing attacks of right kidney pain for twenty-five years, and

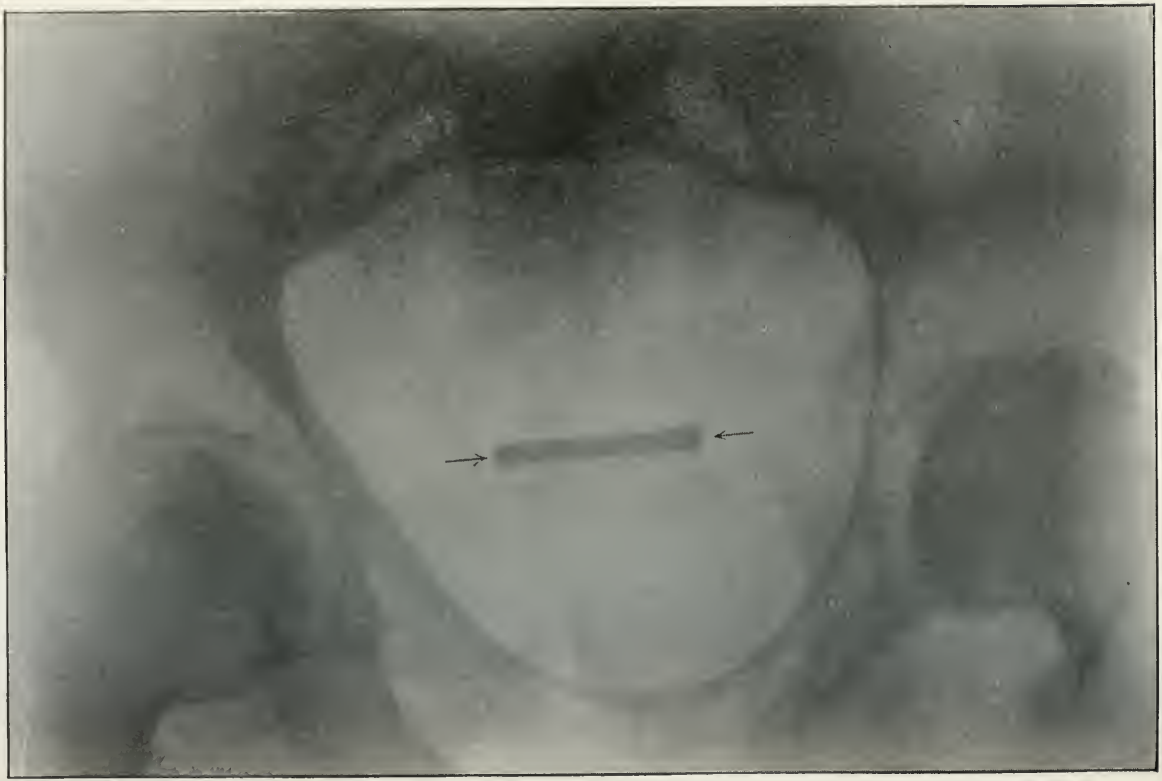
# Plate V.



*Photographed by Jas. Mackenzie Davidson.*

Stereoscopic Skiagram of Large Stone in right Ureter.—(*Fenwick's Case.*)
(See *Fig.* 7.)

PLATE VI.



Skiagram of Glass Tube in Male Bladder.

various opinions as to the cause had been obtained. Skiagrams of the right kidney had been negative. Mr. Mackenzie Davidson radiographed the ureters, and disclosed a large ureteric calculus, which the editor removed, the patient being dry and out of bed on the sixteenth day. The stone was the size of a filbert (*Fig. 7*). It cannot, however, be too strongly impressed on the patient that the method fails under certain conditions (obesity, uratic stones, etc.), and that it is only of value in a certain proportion of cases of renal pain. Probably, as our clinical knowledge increases, fewer patients will be radiographed, while the failures to detect stone in the kidney will be less.

Again, can any object be more exactly depicted than in the skiagram shown in *Plate VI*, of a piece of glass which a man, in a thoughtless mood, had passed down his urethra, and which had slipped into his bladder. The editor was enabled by means of this radiograph to direct the jaws of his lithotrite to the thinner end, which was seized, and the entire piece withdrawn through the urethra.

Dr. Harris, of Sydney[3], contributes a very interesting article on renal radiography. He has examined 320 cases suspected of having either renal or ureteric calculi, and has completed a series of 50 correct positive results (proved by subsequent operations). He mentions that seven mistakes were made, mostly in stout people with uric acid stone, or small stones surrounded by dammed-up pus or water. He points out that he has met with two ureteric stones in 50 cases (4 per cent), and that is probably about the average proportion.

*Fig. 7.*—Ureteric Calculus.

Dr. Shenton[4] states that 200 cases were examined for renal calculi within the last two years, with the following results: Cases in which rays and surgeon found calculi, 28; cases in which surgeon found calculi, but the rays did not, 8; cases stated not to have calculi by the rays, and operated upon with negative results, 11; cases in which the rays found calculi and the surgeon did not, 2. In 39 cases the rays were correct; in 10 they were wrong. The errors occurred in stout people, and in those who presented abnormal opacity to the rays, or in cases in which the stones were composed of uric acid or of urates, or in which they were very small.

Mr. Lucas[5] strongly endorses the general feeling in the profession that even expert skiagraphists sometimes fail to detect calculi in the

kidney, and touches upon a very important aspect and consequence of this failure—the tendency for patients to procrastinate and delay operation because the radiograph is negative. He publishes two cases to show that too great reliance must not be placed on any one method of forming a diagnosis. He adds that it is by no means uncommon now to find a patient insisting on a diagnosis by this means alone, and determined to abide by it, however characteristic other symptoms may be, and however important it may be for his own welfare that an operation should be undertaken without delay. Mr. Lucas alludes to a case in which the symptoms of renal colic and renal hæmorrhage were very characteristic, and associated at times with suppression of urine, indicative of obstruction to a single kidney. The patient died without operation, owing to delay caused by the X-rays failing to show the presence of a stone. Mr. Lucas's "flexion and stamping tests" were well marked, but the patient pleaded for further delay as the Röntgen rays gave negative evidence, and in the meanwhile an attack occurred which, after continuing some time, ended in a fatal collapse. He adds: "Phosphatic stones give shadows intermediate in density between oxalates, which are most opaque, and urates, which are least so. But radiographers sometimes fail in cases when phosphatic stones have been associated with pyonephrosis, and it would seem that the pus within and the adhesions outside the kidney may be the cause of the failure."

There is, however, another and as important an obverse to the medal, in the shape of mimetic shadows which resemble those cast by stone. Chief amongst these are tuberculous foci in the kidney, tuberculous glands along the ureter, or even tuberculous glands in the mesocolon or mesentery. The editor has had quite a series, saving himself from this pitfall (except in the first instance) by means of electric cystoscopy of the bladder and microscopy of the urine. *Plate VII* is an excellent example from a young girl who had hip disease, and was sent to the writer with a skiagraphic diagnosis of stone in the ureter, a diagnosis agreed to by two experts in radiography. It was proved, as anticipated from previous knowledge of the history, to be an enlarged chalky gland in the mesentery near the appendix.

REFERENCES.—[1]*Centr. f. klin. Med.* April 2, 1904; *Brit. Med. Jour.* April 19, 1904; [3]*Aust. Med. Gaz.* Mar. 21, 1904; [4]*Guy's Hosp. Rep.* 1902; [5]*Brit. Med. Jour.* Oct. 1, 1904.

**CALCULUS (Vesical).** *E. Hurry Fenwick, F.R.C.S.*

Intrapelvic extravasation of urine following the crushing of a vesical stone, writes Pardoe[1], is a complication of such gravity that it is a little remarkable that more notice is not accorded to it in text-books of surgery and in works dealing more particularly with diseases of the urinary organs. It is true this event is fortunately of some rarity, but prompt recognition and equally immediate treatment are the only means by which the patient's life can be saved, whilst the question of

*MEDICAL ANNUAL*, 1905. Skiagram of Calcified Glands in Mesentery. (*Fenwick's Case.*)

the choice of operation for vesical stone, in varying circumstances, is forcibly raised by such an occurrence. Pardoe does not here refer to gross rupture of the urinary bladder during the performance of a crushing operation, for the signs of such a catastrophe are immediate and unmistakable, as are the indications for treatment: he alludes to cases in which a very gradual extravasation occurs, causing an extra-peritoneal abscess, with many of the symptoms of a localized septic peritonitis.

Pardoe considers such cases are due to over-distension of the bladder, by the use of the evacuator, acting on a bladder thinned by previous urinary obstruction. He saved one patient by a timely and free incision into a suprapubic preperitoneal extravasation.

Reference.—[1]*Treatment*, Aug. 1903.

**CANCER.** (*See* Breast, Larynx, Stomach.)

**CARBUNCLE.** (*See* Furunculus.)

**CARDIAC FAILURE.** (*See* Heart.)

**CARDIOPTOSIS.** *Prof. A. H. Carter, M.D., F.R.C.P.*

Max Einhorn[1] supplies an interesting account of this condition, together with a history of its literature. From 22 cases which have come under his own observation, he concludes that it is more common in men than women, and generally associated with neurasthenia. Nervous disturbances of the heart, as palpitations, attacks of vertigo, and occasionally inability to lie on the left side, are the principal symptoms in these patients. The relative, as well as the absolute heart dullness usually begins about one rib lower than normal. On an average the large or relative heart dullness begins at the fourth rib, the small or absolute dullness at the fifth rib. The heart itself is not enlarged, and does not show any sign of organic disease, the sounds being perfectly clear and normal.

An increased mobility is usually found. Thus, the distance of the apex beat from the point where it was felt plainest in the dorsal position, to the point where it was found in the left lateral position, was 3 to 5 cms. In the right lateral position the apex beat often disappeared altogether, and the absolute heart dullness could be demonstrated to the right of the sternum. In nearly half the cases of cardioptosis a general enteroptosis is found, and in all cases a more or less well-marked degree of hepatoptosis.

Cardioptosis does not endanger life, and the subjective symptoms caused by it may be alleviated or entirely removed.

Reference.—[1]*Med. Rec.* April 25, 1903.

**CASTRATION.** *Priestley Leech, M.D., F.R.C.S.*

Thorburn[1] describes the following operation as being an improvement on the one usually practised. The pubic and scrotal regions are prepared in the usual manner, and the antiseptic compress is turned off the pubic region only, the genital organs being still covered by it.

An oblique incision 1½ inches in length is made along the line of the inguinal canal, as in the operation for radical cure of hernia: the aponeurosis of the external oblique and the internal oblique are separately divided, and the spermatic cord is traced well down into the pelvis and clamped there with a pair of Spencer Wells' forceps. The cord is transfixed with an aneurism needle and securely tied with silk immediately above the clamp; a single ligature is then placed in the cord about half an inch below the clamp, and the whole cord is cut across close to and on the distal side of the clamp, which is then removed. To close the abdominal wall the internal oblique muscle is sutured to Poupart's ligament, the external oblique aponeurosis is sutured, and the skin wound is completely closed. For the deep sutures silk is used, and for the skin silkworm-gut. The wound is covered with a guard or sealed with collodion. The scrotum is then uncovered, the testicle held up firmly between the index and middle fingers of the left hand, a short, straight incision is made over it (unless a fistula be present, when an elliptical incision may be made), and the testicle, with the cord, is squeezed out and can be completely torn away; the edges of the scrotal wound are still held and clamped by the fingers of the left hand, and straight needles bearing sutures are thrust through; the grasp is released, and any vessels needing tying are easily seized, and then the sutures are tied while the hand still grasps the incision, thus bringing the edges of the skin wound into good position. The advantages are: High access to the cord; the abdominal incision is securely closed, and suppuration of the upper wound is less likely to occur.

Reference.—*Brit. Med. Jour.* Jan. 16, 1904.

**CATARACT.** *A. Hugh Thompson, M.D.*

The question of simple *versus* combined extraction is re-opened by Andrew Wilson[1], who advocates the former method in all cases when the cataract is fully mature, with little soft cortical matter; when the iris is active and healthy; and when the tension of the eyeball is normal. Daviel's operation, which was the same as that now called simple extraction, was abandoned owing to the fear of suppuration; but now this fear no longer haunts the operating surgeon, and the chief reason which is alleged against simple extraction is the frequency with which prolapse of the iris occurs. The Moorfields statistics[2] collected by Marshall showed a percentage of prolapses after extraction without iridectomy of 13·86, as against a percentage after extraction with iridectomy of only 0·87. On the other hand, in Wilson's experience, out of thirty-eight cataracts extracted by the simple method in one year, prolapse occurred in only a single case. Moreover, though in the combined operation prolapse did not occur, adhesion of one or other pillar of the coloboma to the corneal wound did, in 9 out of 62 cases. With regard to perfection of vision after operation, the

comparison is on the side of the simple operation, as we should expect. No doubt the comparative results of the two operations depend to a very large extent on the individual operator, and on the cases that he selects for one or the other. Wilson himself admits that cases which present any complication or unusual condition, whether in the eye itself, or in the general state of the patient, are best treated by the combined method, and this is equivalent to admitting that in any case where the conditions are more or less unknown the combined method is the safer, though the most perfect possible visual result can only be expected from the simple one.

Elliott[3], who has studied the methods of continental ophthalmic surgeons in no less than twenty cities of Europe, reports that there is the greatest divergence of practice in this matter. It is very significant that in cases in which there is only one eye, two of the most ardent advocates of the simple method to be found in Europe—De Wecker and Snellen—perform an iridectomy. In Elliott's opinion the danger of prolapse is very real, and can never be absolutely excluded. With regard to the adhesion of one of the pillars of the coloboma, which sometimes takes place after the combined operation, it is not nearly such a serious complication, and should be avoided by a careful replacement of the pillars of the iris after the extraction of the lens. On the other hand, "from a large number of ophthalmologists, from east to west and from north to south of Europe, I received it," he says, "in no uncertain terms, that prolapse is to their minds a very dangerous complication, and that the operation of opening the section, removing the portion of impacted iris, and freeing the membrane, is, in their experience, often necessary, and is, further, a very serious addition to the dangers of the first operation."

Two other points in this paper are of special interest. First, that the method of irrigation for the evacuation of soft matter (a method elaborated, and for many years practised, by McKeown, of Belfast) is now being tried by some of the best known continental ophthalmologists. Second, as to the method of bandaging, there are only four surgeons mentioned who limit themselves to closing one eye only. The majority close both. The operated eye is opened in from twenty-four hours to a week or ten days, the opposite one being released at any time from twenty-four hours onward.

Another interesting paper on cataract comes from Major Smith[4], a surgeon with large Indian experience. He advocates extraction in the capsule for the great majority of cataracts occurring in adults, the exceptions being the semi-gelatinous variety, in which the lens often has a peculiar bluish tinge. In these cases the capsule is weak, and liable to become ruptured during the operation. For this cause out of over 1000 cases he excluded 2·7 per cent. Of the remainder (1023 cases) the capsule gave way in 8 per cent, but in half of these cases he was able to catch it hanging out of the wound and complete

the extraction, so that in only 4 per cent was the capsule left behind. The advantages claimed for this operation are : (1) Superior visual results ; (2) The practical elimination of iritis, which is due, not as used to be supposed, to bruising of the iris during extraction, but to the presence of soft lenticular matter and capsule afterwards ; and (3) The avoidance of any subsequent operation for after-cataract. The operation, however, is more difficult than the ordinary one, as more depends on accurate manipulation at the moment of expressing the lens ; otherwise the capsule is very liable to rupture, and instead of coming forward, to retract. Great stress is laid on two precautions : First, to have a competent assistant who can keep the eyelids open, instead of continuing to employ a speculum after the corneal incision ; second, to take plenty of time over the manipulation for pressing out the lens.

REFERENCES.—[1]*Scot. Med. & Surg. Jour.* July, 1903 ; [2]*Royal London Ophth. Hosp. Rep.* vol. xiv. part 1, 1897 ; [3]*Pract.* Aug. 1903 ; [4]*Brit. Med. Jour.* Sept. 26, 1903.

**CEYLON SORE MOUTH and DIARRHŒA.** *J. W. W. Stephens, M.D.*

Wijeyesakere[1] considers that this disease is identical with tabes mesenterica. He maintains that both have the same train of symptoms. *viz.* : (1) Diarrhœa ; (2) Wasting ; (3) Soreness of the tongue and mouth ; (4) Falling-out of the hair ; (5) Nyctalopia ; (6) Dilated heart ; (7) Contraction (or enlargement) of liver ; (8) Abdomen retracted or distended ; (9) Progressive enlargement of joints ; (10) Inflammation and enlargement of the sebaceous glands. *Post-mortem* are found : (1) Indurated and caseating glands ; (2) Congestion of the kidneys, etc.

REFERENCE.—[1]*Jour. Trop. Med.* June, 1904.

**CHLOROSIS.** *Prof. A. H. Carter, M.D., F.R.C.P.*

Ebben[1] states, as the result of examination of the blood in this disease that :—

1. The albuminous constituents are less, inasmuch as the amount of hæmoglobin is less ; the proportion of albumin to globulin is normal. There is an increase in the amount of fibrin.

2. The increase in fatty constituents is considerable in the serum as well as in the erythrocytes ; lecithin is reduced in amount in the blood as a whole, and in the serum, while in the erythrocytes it would appear to be increased.

3. Of the inorganic constituents, phosphoric acid, potassium and iron are considerably less in amount on account of the changes in the red blood corpuscles ; calcium and magnesium are increased.

The increase in chloride of sodium is apparent, not real, since the blood of the chlorotic patient is richer in serum than normal blood ; there is no increase in the actual amount of chloride of sodium in the serum.

Clarke and Hawthorne[2] report a case of chlorosis in which optic neuritis, paralysis of the left external rectus of the eye, and absence of knee-jerks were simultaneously observed. The occasional occurrence of optic neuritis in chlorosis is well known, and Hawthorne reported a case in 1902 where paralysis of the external rectus was also present; but the explanation of the fact is not clear. Hawthorne concluded in favour of thrombosis of intracranial veins or sinuses as the probable cause. But in the present case, it is clear that such a lesion could not explain the loss of knee-jerks. If the three phenomena are due to a common cause, it is likely that it consists in some blood change.

Marcolongo[3] has experimented with the extract of **Thymus Gland** in the chloroses of childhood and adolescence, and has found that in five patients, varying in age from eight to twenty-one years, the hæmoglobin percentage and the number and resistance of the red cells rapidly increased. At the same time a considerable amelioration of the general condition and an increase in weight was noted. The preparation contained one part of the juice of the gland suspended in two parts of neutral glycerin. Of this, 2½ drs. were given each morning and night.

References.—[1]*Med. Chron.* Sept. 1904; [2]*Lancet*, April 30, 1904; [3]*Amer. Jour. Med. Sci.* March, 1904.

**CHOLERA.** *J. W. W. Stephens, M.D.*

Tsuzuki[1] gives the result of his investigations into a cholera epidemic in North China in 1902. The diagnosis of cholera is established when cholera vibrios are recognized in the stools. The investigation comprises the following steps: (1) Macroscopic inspection of the stool; (2) Microscopic investigation of stained specimens; (3) Making agar plates from the fæces; (4) Inoculation of peptone water (or R. peptone water); (5) Making agar plates from the peptone-water pellicle; (6) Examination of colonies on plates by agglutination tests under the microscope; (7) Procuring of pure cultures from the colonies examined.

The vibrio isolated is further tested for: (*a*) Morphological and biological properties; (*b*) Intra-peritoneal injection into guinea-pigs (the vibrio must be pathogenic); (*c*) Intramuscular injection into pigeons (negative); (*d*) Agglutination reaction by means of a cholera-immune serum (the result must be positive). Tsuzuki made many attempts to isolate the cholera vibrio out of the river Peiho, and eventually succeeded.

*Part played by Flies.*—Petri's dishes containing sterilized earth were uncovered in a house where there had recently been a case of cholera. After ten flies had settled on the plate, it was covered up and taken to the laboratory. Peptone-water was poured on the plates, which were then incubated. The cholera vibrio was isolated, so that the vibrios were shown to be actually in or on the flies.

*Inoculation.*—Kolle recommends $\frac{1}{10}$ of a sterilized agar culture for each inoculation. The reaction is always slight. The data as to the results were inconclusive, and as far as they proved anything were in favour of those inoculated.

REFERENCE.—[1] *A. F. Schiffs u. Trop. Hyg.* p. 71, 1904.

## CHOREA.

*G. F. Still, M.D.*

The relation of chorea to rheumatism has been made more definite and intelligible by the researches of F. J. Poynton[1], who has shown by experimental investigation that the micro-organism which produces rheumatic lesions in rabbits, will also produce in them irregularity of movements apparently corresponding to the chorea of childhood. He points out that in most cases the onset is gradual. The highest functions (those of the mind) are first affected, so that the child becomes nervous and timid; then muscular movement suffers, so that the child fidgets and grimaces, and thus the whole disease becomes only gradually pronounced. In other cases it comes on quite suddenly, as in a child who, whilst out walking in apparent health, suddenly stumbled, and on returning home was already affected with severe chorea. In these acute cases the cure is often rapid, in the slowly-oncoming disease the recovery is often slow.

Mettler[2], taking the view that chorea is merely a symptom, considers that it may be due to a variety of infections, such as rheumatism, pneumonia, scarlet fever, gonorrhœa, typhoid fever, etc., and proceeds to record a case in which he considers that chorea was due to congenital syphilis in a boy aged eleven years. He passes very lightly over the fact that at the age of eight years the boy was supposed to have had an attack of rheumatism, with some heart affection. He quotes other instances in which chorea was associated with congenital syphilis, and considers that in such cases, energetic anti-syphilitic treatment should be adopted.

James Burnet[3] considers that even in rheumatic subjects chorea may have its origin in causes other than the rheumatic toxin, and instances two cases in which tapeworm was present, and the chorea rapidly subsided when the tapeworm was expelled.

TREATMENT.—The importance of early therapeutic measures is emphasized by Tscherno-Schwarz[4]. His statistics show that drug treatment has but little influence upon the disease; 213 cases were treated with various drugs, and the results compared; recovery occurred most rapidly in those which were treated with **Arsenic**, the number of which was 86, and the average duration of the whole disease sixty-three days. **Antipyrine**, used in 20 cases, was less effectual, and bromide and quinine, used respectively in 47 cases and 31 cases, appeared to have no effect on the chorea. Perhaps the most important result of his observations was to show that in 20 cases treated by simple **Rest** in unfamiliar surroundings, without any drug treatment

whatever, the results were nearly as good as those obtained with arsenic. The disadvantages of arsenic are well known. Cases of neuritis have been reported after its use in large doses in chorea, and more frequent are digestive disturbances from its irritating effect. Chapman[5] condemns large doses of arsenic, and says that while they may reduce the choreic movements, they are likely to influence the patient's general condition unfavourably by disturbing digestion. It has been suggested that where there is any gastric irritability arsenic should be administered hypodermically. It is to be hoped that general opinion will be in agreement with Dr. Chapman, who says that "the pain and annoyance caused by the hypodermic injections would offset any good done by the arsenic." He finds that where Fowler's solution is not taken well, **Donovan's Solution** (Liquor arsenii et hydrargyri iodidi) is sometimes better tolerated. If there is much insomnia, he recommends **Chloral Hydrate**, 5 to 10 grs. in a cup of hot milk. He says that the more powerful hypnotics, such as hyoscine and the coal-tar preparations, should not be used for children.

The treatment of chorea by large doses of **Sodium Salicylate** was advocated last year by Lees[6]; somewhat similar is the treatment by **Aspirin** described by R. T. Williamson[7], who gave this drug in 35 consecutive cases of chorea. The dose used was 10 to 15 grs. three or four times a day, and the aspirin was usually given as a powder in water, to which a drop of lemon-juice had been added; no alkali should be taken just after the aspirin, otherwise the drug is liable to decompose in the stomach and give rise to gastric disturbance. Toxic symptoms similar to those caused by salicylates (noises in the ears, etc.) do not often occur, and most children over seven years of age take the doses mentioned well. Occasionally vomiting results, which may possibly be attributable to some impurity; if it should occur, the drug must be discontinued. Williamson considers that aspirin is of distinct service in diminishing the duration of the affection; all the 35 cases improved when this drug was administered, and improvement often followed its use in severe cases of long duration.

**Hedonal** has been used with success by Vargas[8] in the treatment of chorea; in some cases cure resulted in about a week. It was given as a powder in doses of 7 to 15 grs. suspended in a little sweetened water; for older children it can be used in cachets.

**Hydropathic** measures are very ancient in the treatment of this disease, but Hollopeter[9] has found them most successful. The child was placed in a bath at a temperature of 90 to 100° F. and kept there for one to two hours twice daily; during ten minutes of this time gentle superficial massage is to be applied to the arms, legs, or trunk; the child meanwhile is allowed to amuse itself with playthings in the water. Forty or fifty patients treated in this way did excellently, the duration of the attacks being shortened "from three months to six weeks."

W. F. Somerville[10] considers that **High-frequency Currents** have an undoubted effect in subduing choreic movements. It is well to bear in mind in all cases of chorea, severe as well as mild, the effectiveness of such treatment as " 5 minims of peppermint water three times a day," which Williamson (*loc. cit.*) mentions as followed by decided improvement in some instances ; also the equally good results which follow no treatment in others.

REFERENCES.—[1]*Inter. Clin.* vol. ii. thirteenth series ; [2]*Amer. Jour. Med. Sci.* Sept. 1903 ; [3]*Brit. Jour. Ch. Dis.* April, 1904 ; [4]*Arch. f. Kinderh.* ; *Brit. Med. Jour.* Aug. 15, 1903 ; [5]*Brooklyn Med. Jour.* ; *Ther. Gaz.* July 15, 1904 ; [6]*Brit. Med. Jour.* Aug. 29, 1903 ; [7]*Lancet*, Aug. 22, 1903 ; [8]*Ann. de Méd. et Chir. Inf.* July 15, 1904 ; [9]*Med. Rec.* June 25, 1904 ; [10]*Med. Electrol. and Radiol.* May, 1904.

**CHOROIDITIS.** (*See* RETINITIS and CHOROIDITIS.)

**CHROMOCYSTOSCOPY.** *E. Hurry Fenwick, F.R.C.S.*

*Functional Kidney Diagnosis without Catheterization of the Ureters.*—Voelcker[1] and Joseph[2] have found that indigo-carmine is excreted by the kidneys with sufficient regularity and promptness to make it a reliable indicator of the functional efficiency of the two organs. Indigo-carmine, which is the substance used by Heidenhain in his epoch-making studies of kidney function, has many advantages over the other pigment, methylene blue, which had previously been employed in renal work. It is non-toxic, is excreted only by the kidney, does not suffer any change in its passage through the body, and its appearance in the urine begins within a very short time after its administration, reaches a maximum in thirty minutes, and comes to an end within ten hours. The authors inject into the gluteal muscles 4 cc. of a warm sterile 4 per cent solution of indigo-carmine in physiological salt solution. On introducing the cystoscope, the urine is seen to leave the ureteral openings in jets of blue-coloured fluid, which gradually disperse like puffs of smoke. Not only is the finding of the ureteral orifices greatly facilitated, but it is possible to determine positively the existence or non-existence of two secreting kidneys, and to estimate the relative proportion of the work done by each, as indicated by the comparative size, frequency, and force of the two streams. The method has been used successfully in a number of cases in which the results have been controlled by operation or autopsy, and its value demonstrated.

REFERENCES.—[1]*Med. Rec.* Jan. 9, 1904 ; [2]*Münch. Med. Woch.* Dec. 1, 1903.

**CICATRICES.** *Norman Walker, M.D.*

Varney[1] discusses the histological changes of the skin under X-ray stimulation, and finds that under mild applications they are almost limited to cellular action, elastic muscular and cartilaginous tissue being only affected when used in larger doses. In small-pox, scarring is greatly mitigated if the patients are treated by the rays before the

inflammation subsides. Acne, tuberculous scars, and keloid similarly improve. Where the cicatrix is the result of a burn, previous scarification is helpful. In all cases stimulation should only be strong enough to produce slight redness.

REFERENCE.—[1]*Inter. Jour. Surg.* Oct. 1903.

**CLEFT PALATE.** *Priestley Leech, M.D., F.R.C.S.*

Edmund Owen[1] directs attention to Brophy's operation for cleft palate, which consists in pushing the maxillary and palate bones together in the middle line. Although this operation is attended with more risk, its advantages are so great that Owen thinks the risks may be unhesitatingly accepted. The operation is begun by paring the edges of the cleft, and then an attempt is made to thrust the maxillæ towards each other by firm pressure with the fingers and thumb; if this is ineffectual the cheek is raised, and by a strong, curved needle in a handle, a silk suture is passed across the nasal fossa above the level of the hinder part of the alveolar processes. The end of a thick silver wire is then hooked on to this suture, and by pulling on the latter the wire is made to take its place. The wire suture thus lies above the horizontal processes of the palate bones, where it can be seen through the cleft. Similarly, a wire suture is taken through the maxillæ above the front part of the cleft. Two small, oblong, leaden plates with a hole drilled near each end are prepared, and one of them is laid along the outside of the right maxilla, under the cheek, the end of the hinder wire being passed through the posterior hole, and the end of the front wire through the anterior hole. The right ends of the wires are then twisted together from left to right, the plate being closely applied against the maxilla, after which the twisted ends of the wires are pressed down flat. The ends of the wires under the left cheek are then similarly treated, and as they are being twisted up the maxillæ are squeezed together, or an attempt is made to squeeze them together. If they do not come together, the mucous membrane over each malar process is incised, a scalpel is introduced, and the maxillæ are sufficiently divided to enable their palatine processes to be thrust into the middle line. This brings the edges of the cleft in contact, and they can be sutured together. The velum is less interfered with in this operation than in many others. There is more shock effect.

Brophy[2] is satisfied that the best time to operate on cleft palate is within the first three months after birth, if practicable. The advantages of operating early are: Shock is less, because the nervous system of a young child is not so well developed, and is therefore not capable of receiving the impressions that it would in later life; young children react better; all mental apprehensions are eliminated; there is much less deformity of both bony and soft tissues.

REFERENCES.—[1]*Lancet*, Dec. 19, 1903; [2]*Med. Rec.* July 9, 1904.

**COLITIS.** *William Murrell, M.D., F.R.C.P.*

For practical purposes colitis may be divided into: (1) Simple colitis; (2) Mucous colitis; (3) Ulcerative colitis.

1. *Simple Colitis.*—This is a catarrhal inflammation of the colon comparable to bronchitis or gastritis. It is difficult, especially in the case of children, to distinguish it from an ordinary attack of diarrhœa. It is not usually fatal, but death may ensue from exhaustion. The chief diagnostic point is that the stools contain much mucus, and often bright-red blood. There may be elevation of temperature, and there is commonly abdominal pain.

When the attack comes on suddenly, with diarrhœa and vomiting, the motions being frequent and profuse, consisting chiefly of fluid, with pains in the abdomen and the calves of the legs, a saturated solution of **Camphor in Alcohol,** given in 3-minim doses every five minutes for a quarter of an hour, and then hourly for six hours, will usually afford relief. The patient should be kept in bed, with hot fomentations to the abdomen and hot bottles to the feet. He should sip frequently a tumblerful of cold milk containing two tablespoonfuls of old **Liqueur Brandy.**

When the attack comes on less suddenly, and the motions are green in colour, contain much mucus, and are highly offensive, a grain of **Perchloride of Mercury** should be dissolved in half a pint of water, and a teaspoonful of this given every ten minutes for an hour, and then hourly for six hours.

2. *Mucous Colitis.*—This many-named disease is also known as "membranous colitis," "muco-membranous colitis," "membranous enteritis," "tubular diarrhœa," and "mucous colic." It is a disease of the large intestine, distinguished among other features by the passage of quantities of mucus of varying appearance, which may be passed in strings or in the form of a tubular membrane. It is a chronic affection, which, appearing most commonly in young or middle-aged women, renders their lives miserable from the pain, discomfort, and exhaustion to which it gives rise. It is not confined to any age, and children are not exempt. In a greater or less degree of severity it is not uncommon, although it often escapes recognition: once established, it is difficult to cure. The symptoms are:—

(*a*). Constipation. This is the first symptom, and may commence at an early age. It is obstinate and protracted, and is probably responsible for the subsequent condition. There is functional intestinal atrophy, the patient never establishing intestinal equilibrium. Even when diarrhœa sets in, the attacks of it alternate with periods of constipation.

(*b*). Abdominal pain. There are attacks of colicky pain of variable intensity, usually severe, diffused over the abdomen, and more marked along the course of the colon. They may last only a few hours, or many days. They are preceded by symptoms of gastric disturbance,

and are often excited by some trivial error in diet. The pain subsides as soon as the bowels are relieved.

(*c*). Diarrhœa. This is the most distinctive feature of the disease, the evacuations consisting of mucus passed in quantities of a cupful to half a pint. It is often free from fæcal matter, and has the appearance of frogs' spawn. It may be in the form of membranous shreds of all sizes up to complete tubular casts of the colon. It may be in long, whitish cords, consisting of portions of membranous exfoliations, twisted up in their passage through the spasmodically contracted intestine. These membranes and cords consist of inspissated mucus, devoid of structure, and including in their thickness particles of undigested food or fæces, with epithelium cells, phosphatic crystals, and cholesterin. The membrane consists chemically of albumin, and contains no fibrin.

Respecting the causation of the disease little is known. The patients are invariably of a strongly-marked neurotic habit. The women are hysterical, and the men suffer from hypochondriasis, neurasthenia, or melancholia. Mental disturbance will often excite an attack. As a result of the continuous drain and want of sleep, there is loss of flesh, with marked anæmia.

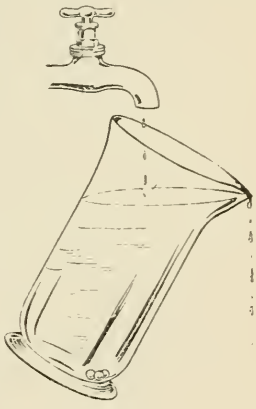


*Fig.* 8.

In cases in which the membranes have been examined *in situ*, Allchin[1] finds that the subjacent mucosa is unaffected. The disease is not inflammatory in origin, and is probably a neurosis in which the motility of the bowel is perverted, as shown by the constipation and colic, and the hypersecretion of mucus. A point in favour of its catarrhal origin is that it is not uncommon for other mucous membranes to exhibit concurrently a similar catarrhal condition, those most commonly attacked being the uterine, vaginal, and oral.

Another coincident is the appearance in the stools of *intestinal sand*, consisting of small concretions composed of carbonate and phosphate of lime coloured with urobilin. The sand is formed in the upper part of the colon, an excessive secretion of alkaline mucus favouring its production. Possibly there may be an excretion of uric acid by the intestinal mucosa. The detection of the sand in the fæces requires some care, and Dr. Edward Blake[2] advocates the following mode of procedure. He says: "It is not enough merely to inspect the fæces of a patient suffering from colitis. It is not enough, if intestinal calculus be suspected, to order the nurse to pass the fæcal mass through a sieve. Such methods are far too crude and too primitive. A dejection should be secured after a high enema of plain warm water.

Careful search is then made for coagulated mucus, and portions having been reserved for microscopical and for bacteriological examination, the remainder is placed in a large lipped vessel of glass (*see Fig.* 8). A water-tap is allowed to flow over the contents, which are gently stirred as the lighter portions are poured away. When the heavier residue has been well cleansed, it is put aside for careful macroscopic and microscopic observation. The ova of the chief intestinal *animal* parasites will be thought of, and the inorganic residue, food-products being discounted, will be found to consist of salts of lime, if true intestinal sand be present."

Many French writers regard mucous colitis simply as one of the manifestations of "arthritism," gout, rheumatism, gravel, and gall-stones being other members of the group.

Both mucous colitis and the accompanying intestinal lithiasis have been confounded with appendicitis, and the patient operated on accordingly.

The TREATMENT of mucous colitis is unsatisfactory, and drugs administered by the mouth prove of little avail. The natural tendency of the disease is not towards self-cure, and this being so, it is more resistant than many other maladies to remedial agents. In all cases the patient should be kept strictly in bed, and the diet, for a time at least, should be limited to **Milk** and **Plasmon**. A daily evacuation of the bowels should be ensured, and the kidneys should be flushed out frequently by the copious administration of a natural carbonic acid mineral water of low mineralization, such as **Source Perrier**. Systematic **High Irrigation** with boracic acid solution, followed by large injections of 1 per cent **Argyrol** at a temperature of 80° F., give the best results.

Dr. Maurice de Langenhagen[3], as the result of a large experience, speaks highly of the systematic treatment carried out at Plombières, and undoubtedly the *douches ascendantes* are of much value. He urges that at a hydro-mineral station various curative elements are combined—the change of air, of scene and diet, the drinking and bathing, and, above all, the introduction into the colon by injection of a natural antiseptic water possessing special absorbent and dissolving properties. The irrigation is given by means of a fountain-injector containing two quarts, and fitted with a long indiarubber pipe, from 1 metre 50 cms. to 2 metres in length, and terminating in a supple cannula of red indiarubber, from 30 to 40 cms. in length and from 10 to 12 mm. in diameter, pierced near the extremity by two holes, lateral and opposite to one another, so that if one of the orifices becomes stopped up by a plug of fæcal matter or mucus, the other remains free. The injector should be placed at a very slight height above the bed on which the patient lies—at the most from 25 to 60 cms.—so that the pressure is extremely low, and the tap should be only slightly opened, so that a very slow discharge of

the liquid (about ten minutes for a quart) may be assured. The water used for the irrigation should be previously boiled, to which can be added or not some softening substance, such as linseed, marsh-mallow root, or some medicated substance, such as boric acid, naphthol, or ichthyol. The water should be of a temperature varying from 35° to 48° C. A temperature of about 35° C. is best suited to cases in which there is a tendency to spasm and to "resistance" on the part of the bowel; the temperatures of 45° C. and above are most useful when there is complete atony without spasm, and where it is desirable to stimulate the muscular tissue and excite contractibility. The quantity injected varies from one, or even less, to one and a half quarts.

Prof. von Noorden and Dr. Carl Dapper,[4] on the other hand, advocate an "indigestible" diet, that is, one which furnishes a copious residue, and consists largely of leguminous vegetables, fruit, and wholemeal bread. They give much fat in the form of cream and butter, and relieve the bowels by large enemata of olive oil. They claim that of 75 patients so treated, 50 were permanently cured.

Da Costa found **Iron** useful, but the astringent forms increase the dyspepsia and constipation, and consequently the frequency and severity of the attacks. If iron is given it should be in the form of an organic salt, such as **Iron-vitellin.**

In chronic cases of mucous colitis, Dr. de Langenhagen[5] advocates the following system of dietary, the problem consisting in nourishing the patient in such a way that the excrement shall be neither abundant nor irritating. The food is selected from these aliments: Milk, meat soups (chicken and other) with every particle of fat removed, beef-tea, porridge made of barley, oatmeal, maize, ground rice, arrowroot, raccahout, etc.; eggs, boiled, scrambled, or in custards, but neither fried nor as omelets (as fat is to be avoided); white light fish—*i.e.*, sea fish boiled, or if fried the skin and all the parts imbued with fat should be taken away; finely-minced, very lean roast and boiled mutton, or beef, or veal, or chicken; sweetbreads and brains. Vegetables mashed very fine and passed through a sieve may be given. As a rule it will be found best to give only dry pulse vegetables, such as dry haricot beans, peas, and lentils; mashed potatoes may also be given, *but on no account should any green vegetables be allowed.* Even when finely chopped, they pass through the intestinal tube and thence into the fæces without having been through any digestive action; they are expelled in the same state as they were eaten. The consumption of green vegetables does not, as is sometimes supposed, diminish constipation. It is necessary to forbid rigorously all spinach, cabbages, salads, and all raw fruits (exception to be made in those rare cases where experience shows that they are tolerated and normally digested and assimilated). Stewed or baked fruits without skins may be allowed, also boiled and baked batter-puddings and custards. Very little bread should be taken, and that little should be eaten stale or

toasted dry. Wine and all alcoholic drinks should be absolutely banished. Alcohol acts like a poison on the intestinal canal, and is always harmful. The best drink is pure, fresh, spring water, or a very light table beer mixed in equal parts with a slightly mineralized table water. Milk does not suit all stomachs ; it frequently disagrees when it is given in too large quantities at a time, but given moderately, associated with the above regimen, it is generally digested, and it has rarely to be excluded from the patient's bill of fare. All fatty matter should be strictly forbidden, and all pork, except very lean ham. No game, crabs, lobster, crayfish, or other crustaceans should be allowed. All hashes, stews, rich gravies, sauces, and pastry of every kind should be forbidden. In serious or inveterate cases greater severity still is needful. Patients should in these cases take nothing but milk, light cereal porridges, eggs, beef-tea, and sometimes a very little finely-minced raw meat. In cases where milk is not digested, warm infusions such as those of chamomile and lime-tree bark may be given. Bread should be strictly forbidden, or be given only in very small quantities, in the form of rusks or dry breakfast biscuits.

3. *Ulcerative Colitis, or Simple Ulcerative Colitis.*—These terms are admittedly bad, for ulceration of the large intestine may be dysenteric, tuberculous, malignant, or syphilitic in origin, whilst enteric ulcers are by no means confined to the ileum and jejunum. Other varieties are, the follicular ulcer met with in the diarrhœic diseases of children, and the stercoral ulcer, due to injury inflicted by the pressure of hardened fæces, or possibly the result of the products of their decomposition. Difficulty exists in distinguishing between the different forms of inflammatory disease affecting the colon, and it is impossible from an inspection of the large intestine alone to discriminate between ulcerative colitis and chronic dysentery. The clinical features of the former disease are, however, sufficiently characteristic.

Respecting its origin and causation we know little. It is comparatively rare, but during the last two years has been much more prevalent in England. From its close resemblance to tropical dysentery, which is microbic in origin, it is probable that some organism is at the root of it. The disease is one of high mortality, but often of considerable duration, the patient hanging on for years in spite of much bodily weakness. It attacks both men and women, and the majority of cases occur between twenty and thirty, although it has been met with in a boy of thirteen.

The onset is insidious. There is no rigor, and nothing in the early stage to distinguish it from an ordinary attack of diarrhœa. Pain is not a prominent symptom, and there is neither tormina nor tenesmus. The temperature is persistently high, ranging for many months from 100° to 103° F. daily ; sometimes it is but little elevated, and is usually sub-normal during the last forty-eight hours of life. Diarrhœa is always a prominent feature, and is practically unceasing, there being

often as many as from 60 to 100 evacuations a week. The number is increased by any indiscretion in food. The motions are liquid and offensive, rarely containing formed solid matter, and consist chiefly of mucus, with or without blood. Microscopically they show torulæ, streptococci (in more than one variety), bacilli (the *B. coli communis* and others), epithelial cells (columnar and spheroidal), and pus with *débris* of food. Cultures may yield the *B. coli communis* and the *B. proteus vulgaris*, but there is great difference in this respect, and the motion may be an almost pure culture of streptococci. Vomiting may be severe and persistent, but is sometimes intermittent, and not uncommonly absent. The tongue is clean, red, and irritable, or covered with dirty brown fur. When the tongue is clean there is no loss of appetite, and the patient urgently demands more food. Loss of weight is always noted, and may be at the rate of from 3 to 4 lbs a week. There is a corresponding diminution in strength. The patient looks anæmic; but in one case, after four months' illness the erythrocytes numbered 4,650,000 per cmm., with hæmoglobin 82 per cent. There is no mental weakness or depression, and the patient is usually bright and hopeful to the last. Bed-sores and ischio-rectal abscesses are common. Metastatic abscesses are rare, and little or no change is found in the liver. It is said that ulcerative colitis is often associated with chronic Bright's disease, but this is not the case.

The *post-mortem* appearances present considerable uniformity, there being a condition of ulcerative colitis throughout. The remaining mucosa is much thickened, and stands well up above the ulcerated gut. Dr. Frank Pope[6], of Leicester, under the title of "Colitis Polyposa," describes a condition of hypertrophic inflammation of the colon in which the mucous membrane is found thickly covered with pyramidal polypoid excrescences varying in size from that of a small shot to that of a pea.

Treatment.—The patient should be kept strictly in bed, with open windows day and night. The diet should consist of three pints of milk in the twenty-four hours, with, if necessary, the addition of lime-water. **Plasmon** and **Plasmon Chocolate** are usually well taken, and do not increase the diarrhœa. **Beef-tea, Chicken Panada,** and **Light Puddings** may be tried cautiously. Medicinal treatment commonly fails to do any good or to ameliorate the symptoms. In a succession of cases treated[7], the following modes of treatment failed: (1) Opium and morphine in all forms, whether given by the mouth, hypodermically, or in enemata; (2) Carbonate of bismuth in large doses, up to half an ounce every four hours; salicylate of bismuth; (3) Astringents, such as acetate of lead, perchloride of iron, and sulphate of copper; (4) Intestinal antiseptics, such as β naphthol, salol, and various preparations of formic aldehyde; (5) Ipecacuanha given dry and with the usual precautions; (6) Sulphate of magnesia and sulphate of quinine alternately.

The only method of treatment I have found successful[8] was a copious intestinal injection of 1 per cent **Argyrol,** a combination of silver and vitellin. The following is a case in point. The patient, a man, æt. sixty-four, had suffered from ulcerative colitis for over a year. The ordinary methods of treatment were tried in vain, and he was gradually losing ground. From June 5th to 9th inclusive he had twenty-three motions. On the 10th, after a preliminary enema of **Boric Acid,** 8 grs. to the pint, he was given by means of an irrigation tube of small diameter a rectal injection of a 1 per cent aqueous solution of **Argyrol** at a temperature of 80°. When about five pints had been introduced, the patient being in the knee-and-elbow position, attention was called to the fact that a claret-coloured odourless fluid was pouring out of his mouth, a fluid identical in colour and appearance with that in process of injection into the rectum. The specimen was sent to Dr. Wilson Hake at the Westminster Hospital Medical School, who, after complete analysis, reported that it was a solution of silver not differing apparently from a 1 per cent argyrol solution with which it was compared. The patient seemed none the worse for the injection, and had a fairly good dinner. On the following day he had only three motions, and on June 12th the same number. The temperature was normal on the 11th, but on the 12th it rose to 102·4°, falling again in a few hours to normal. From this time there was no return of the diarrhœa, the bowels never being opened more than once a day. As a matter of precaution the injection was repeated on the 14th and 16th, but there was no repetition of the regurgitation of fluid from the mouth. In a few days the patient was able to take meat, potatoes, and green vegetables; he rapidly regained weight, and on July 6th was discharged well.

Other patients treated on the same lines[7] made an equally rapid recovery. During convalescence **Iron-vitellin** in ½-ounce doses three times a day was given with advantage, there being a marked improvement, not only in the number of red blood corpuscles, but also in hæmoglobin value. Cases of Asylum Dysentery also derived benefit from the mode of treatment.

**Surgical Treatment** has its advocates. The operation commonly proposed is that of establishing an anastomosis between the ileum and the lower end of the colon, or, failing that, a right-sided colotomy. Mr. Walter Spencer has performed the operation of syphoning the vermiform appendix, and, after tying it to a rubber catheter, irrigating the bowel from above with copious injections of normal saline at 100° F., allowing it to run out at the rectum.

(*See also* INTESTINAL DISORDERS.)

REFERENCES.—[1]W. H. Allchin, "Bolingbroke Lecture on Some Features of Diseases of the Colon," *Clin. Jour.* July 13, 1904; [2]"Colitis," H. J. Glaisher, 1904; [3]"Muco-Membranous Entero-Colitis," J. A. Churchill, 1903; [4]"On Intestinal Mucous Colic and its Treatment," Berlin, August Hirschwald, 1903; [5]*Lancet*, April 30, 1904; [6]*Brit. Med. Jour.* July 23, 1904; [7]"Five Cases of Ulcerative Colitis," *Lancet*, March 12, 1904; [8]"A Case of Ulcerative Colitis," *Ibid*, Aug. 13, 1904.

**CONGO FLOOR MAGGOT.** *J. W. W. Stephens, M.D.*

These interesting larvæ of blood-sucking habits are described by Dutton, Todd, and Christy[1]. They are the larvæ of a fly, *Auchmeromyia luteola*, belonging to the family *Muscidæ*, to which belongs *Musca domestica*, one of the common house-flies. The fly itself, however, does not bite. The larvæ bite at night, and in the daytime bury themselves in the earth floors of the native huts. They burrow down to a depth of 3 inches or more, when the natives dig them out with a pointed stick. At night they creep out and attack the limbs of those sleeping on the floor, though they are also credited with the power of being able to jump on to raised platforms 18 inches high! They occur, widely distributed, in the Congo. The larvæ vary in size from 2 to 15 mm., and contain blood in various stages of digestion. They are of a dirty-white, translucent colour, consisting of eleven segments, and resembe larvæ of bot-flies. The larva then develops into a pupa, brown or black in colour, 9 to 10 mm. long by 4 to 5 mm. wide. The anterior end is conical, the posterior rounded. This stage lasts about a fortnight. There then emerges the fly, of a general smoky, light-brown colour. The flies sit motionless on the dirty thatch of the native huts. They are somewhat difficult to detect and to catch. They are generally the only flies found in huts infested with the maggot. Eggs are said to be laid on the ground, especially if any decomposing urine is there. The fly is of about the general size and build of a blue-bottle, and has a wide distribution in tropical and subtropical Africa; thus it is found in Nigeria and Natal, but so far the blood-sucking habit of the larva has only been reported from the Congo, a peculiarity which is inexplicable at present unless confusion in the flies has possibly arisen.

Reference.—[1]*Report of the Trypanosomiasis Expedition to the Congo*, 1903-1904, memoir xiii. p. 49. *Liv. School Trop. Med.*

**CONJUNCTIVA (Disorders of.** *A. Hugh Thompson, M.D.*

*Epithelial Plaques of the Conjunctiva* is the name given by Lister and Hancock[1] to certain rarely-observed projections of the ocular conjunctiva akin to callosities of the skin, and caused by a localized thickening of the epithelium. They are liable to be mistaken for epithelioma, and in some cases a certain diagnosis can only be made by microscopical examination. The original paper should be consulted.

*Tuberculosis of Conjunctiva.*—In the last volume of the *Annual* we recorded the application of **X-rays** to the treatment of trachoma. We now have to record their successful application to a case of tuberculosis of the conjunctiva. The case[2] (Sydney Stephenson's) was that of a child of four. The upper and lower retrotarsal folds were strewn with miliary granulations. The sub-maxillary and pre-auricular glands on the same side were enlarged. The tubercular nature of the affection was proved by microscopical examination.

Bacilli were found and inoculated with a positive result. After nine exposures to the X-rays, at a distance of 6 to 10 inches, during a period of a month, the local condition underwent great improvement, and in three weeks longer it was practically cured. (*See also* EYE.)

REFERENCES.—[1]*Roy. Lond. Ophth. Hosp. Rep.* Oct. 1903; [2]*Brit. Med. Jour.* June 6, 1903.

**CONSTIPATION.** *Robt. Hutchison, M.D.*

Luzenberger[1] reviews the different forms of treatment of chronic constipation. By this term absolute absence of the daily motion is not necessarily implied, but more often the passage of a scanty and hard motion. Nothnagel has made a useful division of the cases into three groups: (1) Those depending on some physiological factor, as, for instance, a diet deficient in fluids; (2) Those due to some other disease—for example, carcinoma of the rectum, and accompanied by other grave symptoms; (3) Those in which constipation is the main symptom. The treatment of the second group of cases is not considered in the article, and those of the first group need only the recognition and change of the underlying factor.

The constipation of the third group is explained in several different ways. By some it is held to be a symptom of nervous weakness. Herz ascribes it to insufficiency of the ileo-cæcal valve, and a consequent backward flow of the intestinal gases, by whose action he believes the intestinal contents are driven forwards. Usually it is considered to be due to weakness of the intestinal muscle, but it is often caused by spasm of the muscle, especially in the cases where constipation alternates with diarrhœa. The most important treatment is often the **Regulation of the Diet.** As long ago as 1750, Cocchi recognized that the intestinal pain of neurasthenics grew worse rather than better under any form of drug treatment, and could only be remedied by dietetic and mechanical measures. In choosing a diet, the patient's individual peculiarities, his general condition, and the state of his digestive apparatus as a whole, must all be considered. In every case the diet should be a mixed one. Luzenberger finds that in many cases quite small changes in the habits of the patients bring about cure—for example, lengthening the time between the midday and evening meals, drinking cold water, followed by a cup of coffee, before breakfast, drinking goat's milk instead of cow's milk where the latter has a constipating effect. **Fruit,** such as sweet, juicy oranges, and especially grapes, should be eaten before breakfast, and certain vegetables taken. The writers agree that fruit of different kinds, and food yielding a large residue after digestion, should be included; while lettuce, melons, asparagus, cucumbers, tomatoes, spinach, cabbages, onions, and celery are amongst the vegetables specially recommended.

The next form of treatment is *mechanical.* **Injections** into the rectum are useful, but should not be given daily, as is sometimes advised, and, if frequently given, the form of injection should be

constantly varied. Jaksch especially recommends injections of olive oil. It may be used in addition to water injections, or still better results are obtained if a small quantity of olive oil be injected and retained for an hour in the rectum. **Massage** has long been acknowledged to be a useful treatment. The methods employed vary; thus Jaksch urges that no one scheme of massage should be adopted, but the method adapted to the individual case; Piorry relies on pressure applied so as to further the advance of the intestinal contents; Norström recommends Swedish massage. Luzenberger has found Swedish massage to give the best and most lasting results. When combined with the use of **Electricity** the effect is more speedily obtained, but of shorter duration, perhaps because the patients tend to more quickly break off the treatment. Amongst other mechanical measures may be mentioned the pumping of gas from the rectum, the use of rectal bougies, and gymnasium treatment, which probably acts mainly through an improvement of the general condition.

There is endless variety of **Hydropathic Treatment,** but two main forms may be mentioned; the first relying on differences of temperature in the water used rather than on force of stream, the second on the force with which the water is applied. An example of the first is the method of Beni Barde, who gives in order a long-continued douche of the loins, a foot-bath with running water, an anal douche, a douche of the side, and last, a quite cold abdominal douche. An example of the second is that of Winternitz, who places the patient in a sitz-bath of lukewarm water, and then pours water from a height on to the abdomen.

The treatment by **Electricity** is last considered, and is especially useful in nervous cases. The faradic current was first employed, but Schillbach's experiments on animals proved that while the abdominal muscles are strengthened by the current, no effect is produced on the intestinal muscle. With the galvanic current, however, constant forward contraction of the intestinal muscle results. A convenient form of applying the galvanic current is by filling the rectum with warm salt solution, in which an anal sound attached to the positive pole rests, while the negative pole is on the abdomen. The water forms a cylindrical electrode, and a strong current may be used without producing irritation. Other ways of applying electricity might be mentioned, such as the combination of the faradic and galvanic currents, and the use of statical electricity.

Curlo[2] considers that **Physostigmine** is a useful drug in cases of constipation depending upon intestinal atony, and in meteorism. He gives the salicylate in doses of $\frac{1}{30}$ to $\frac{1}{20}$ grain daily. The drug should be given in keratin-coated pills. In cases of meteorism, 1 to 3 mgrams may be dissolved in water, and injected into the bowel. Its use is contra-indicated in constipation due to spasm, and in cases where there is catarrh, and in enterocolitis.

References.—[1]*Zeits. f. Diät. u. Phys. Ther.* Sept. 1903. (Abst. in *Brit. Med. Jour.* Dec. 5, 1903); [2]*Riform. Med.* Sept. 16, 1903.

**CONSTIPATION, Operative Treatment.** (*See* RECTUM.)

**CORNEA** (**Diseases of**). *A. Hugh Thompson, M.D.*

*Corneal Lesions of acquired Syphilis.*—Sydney Stephenson[1] read an interesting paper on this subject at the British Medical Association in 1903. Two forms of lesion occur. The first is "Mauthner's punctate keratitis," a condition hitherto unnoticed in British ophthalmological literature. It has nothing to do with the ordinary so-called "keratitis punctata," which consists of dots deposited on the posterior corneal surface, but is characterized by groups of circumscribed, greyish spots lying at various depths in the substantia propria of the cornea, absent or ill-developed episcleral injection, rapid development, and equally rapid disappearance. The case recorded occurred four years after primary infection, and yielded in about six weeks to **Mercurial treatment.** The second form of corneal lesion is ordinary interstitial keratitis, which was formerly believed to be a manifestation of the inherited disease alone, but which recent figures show to be due to acquired syphilis in from 2 to 10 per cent of the cases. There is no constant feature which distinguishes these from the ordinary inherited cases, but the majority of them are characterized by: (*a*) One-sidedness; (*b*) Patchiness; (*c*) Prompt response to specific treatment; and (*d*) Favourable termination.

*Conical Cornea.*—Stanford Morton[2] gives details of 20 operations for conical cornea, all but four of them by excision of the apex of the cone, a method which he was led to try by reading the notes of a series of successful cases reported by Mr. C. Higgins in 1880.[3] The operation consists in transfixing the apex of the cone by a long, narrow, and stiff Graefe knife, whose edge is turned forwards and a little to the right. The knife is pushed steadily forwards until it cuts its way through the cornea to the right of the apex of the cone, thus forming one edge of the elliptical piece to be excised. The flap thus formed is held well up by its free edge with fine forceps. The knife, being then passed beneath the points of these forceps, cuts out on their left side through the corneal tissue, and so completes the excision of an elliptical piece, about 2 mm. by 1 mm., containing the apex of the cone. Excision of the apex may be performed in the vertical or horizontal meridian, or in the meridian of least curvature. Possibly with a vertical incision the wound is more under cover of the lids, and therefore less disturbed. Nearly all the cases operated on by this method were much improved, a vision of $\frac{6}{9}$ or $\frac{6}{6}$ being obtained in 6 out of the 20 eyes operated on. The complications occurring were: (*a*) Anterior synechia; (*b*) Iritis and posterior synechia; (*c*) Increased tension; (*d*) Hypopyon.

Other operations recommended for conical cornea are: (1) **Cauterization** with perforation; and (2) Cauterization without perforation. This last procedure has been elaborated by Sir Anderson Critchett[4],

who advocates that the cautery should be used in three concentric zones, increasing in heat, and therefore in depth, towards the centre.

Lang[5] speaks of good results, without operation, from wearing **High Convex Cylinders**, axis horizontal, an observation which we can confirm from personal experience. Sometimes better results are obtained from high minus cylinders, axis vertical (*i.e.*, "against the rule").

References.—[1]*Brit. Med. Jour.* Sept. 26, 1903; [2]*Ibid;* [3]*Brit. Med. Jour.* 1880, vol. i.; [4]*Conical Cornea, its Surgical Evolution;* [5]*Trans. Ophth. Soc.* 1903, p. 352.

**DEAFNESS.** *Hunter Tod, M.B., F.R.C.S.*

Ferreri[1] has noticed in Italy, where the women suckle their children for prolonged periods, that during this period diseases of the ear are usually made worse. These disturbances are of two kinds: Firstly, prolonged lactation causes anæmia of the cortical centres, producing attacks of vertigo, tinnitus, and progressive diminution of the auditory perception. If lactation be quickly brought to an end, these symptoms tend to disappear. Secondly, there are cases in which, after a few days of increasingly-disturbed hearing with pain in the ear, the patient suffers from vertigo and vomiting, with sudden complete loss of hearing. In these cases deafness is usually permanent. The author suggests that the cause may be the same as that of sudden deafness sometimes observed in cases of leukæmia, namely, a hæmorrhage determining inflammatory processes in the labyrinth, vestibule, and semicircular canals. He quotes nine cases, and concludes that lactation should never be prolonged beyond nine months.

Schwabach[2] relates two cases, in both of which there was deafness, tinnitus, and attacks of vertigo. In one case the symptoms were apparently due to Fowler's solution, and in the other to salipyrin. The author says that the fluid **Extract of Ergot** often brings relief in these conditions, although there appears to be no pharmacological reason for its doing so.

C. H. Fagge[3], in a paper on the common forms of internal-ear deafness, again draws attention to the important fact that ordinary ear-inflation, either by Valsalva's or Politzer's method, commonly makes people with nerve deafness worse. He points out that in other diseases a lesion of the eighth nerve may be of importance, and gives the following list of the more common diseases in which such a lesion may be of some diagnostic value: (1) Locomotor ataxy—tabetic nerve deafness (auditory nuclei); (2) Cerebellar symptoms (headache, vomiting, optic neuritis)—cerebellar tumour; (3) Bulbar symptoms—glosso-labial paralysis; (4) Quadrigeminal symptoms (blindness, optic neuritis, inco-ordination of eyes, unsteady gait)—lateral fillet or pineal or quadrigeminal tumour; (5) Hemianæsthesia and hemianopsia on same side—hysteria or a lesion of posterior part of

the internal capsule; (6) Word-deafness—left upper temporo-sphenoidal lobe in the right-handed, and *vice versa*; (7) Positive Rinne with diminished bone conduction on the opposite side in temporo-sphenoidal abscess.

REFERENCES.—[1]*Arch. Ital. de Roy. Rinol. e Laryng.*; [2]*Deut. Med. Woch.* March 10, 1904; [3]*Guy's Hosp. Gaz.* April 9, 1904.

## DENTAL SURGERY.

*J. G. Turner, F.R.C.S., L.D.S.*

*Dental Caries.*—Bryan[1] recommends bathing the teeth in a 40 per cent solution of $AgNO_3$ every six or twelve months. The rubber dam is applied, and the solution well worked into all fissures.

Michael, of Würzburg[2], in a paper on the "Etiology of Caries, as shown by results of examination of teeth of children," finds that of 11,762 children, 7763 had been nursed by their mothers. Of these 11·46 per cent showed caries, *i.e.*, 8 per cent less than the average. Those nursed for more than ten months, gave 9 per cent only as showing caries. Those nursed less than seven months, showed 13 per cent caries. Children brought up on other foods showed higher percentages of caries: fed on cow's milk, or on gruel and water, 22 per cent; on oatmeal, Liebig, or Nestlé's food, 27 per cent. Of 671 children living on meat for dinner, mealy food, vegetables, and fruit, 18 per cent showed caries; of 750 seldom eating meat, living on legumes and bread, 26 per cent.

*Pyorrhœa.*—C. H. Tozier[3], under the title of "A New Method for Treating Pyorrhœa Alveolaris," recommends the use of **Compressed Air** to separate gums from the teeth and blow away blood, etc., when removing tartar, and to produce a forcible spray for applying solutions to the sockets.

C. S. Parker[4] records successful results from **X-rays, High-frequency Currents,** and a **Germicide.** The mouth is first cleansed of tartar and pus; a germicide is sprayed into the gums, and X-rays used for one or two minutes, followed by five minutes of high-frequency currents. Cure in five sittings is claimed in some cases.

*Dental Abscess.*—Schneider-Turbingen[5] recommends the use of **Paraffin** to fill in the cavities of chronic dental abscess or cyst, using for its introduction Noffje's fistula syringe or paraffin bougies.

*Replantation.*—J. H. Gibbs[6], summing up the pros and cons of replantation, concludes, as do most others, that it is only a *dernier resort.* As treatment of accidentally-displaced teeth, it is good practice, but uncertain as to durability. An incisor has been known to remain in forty-one years, but a molar seems never to last long—about four and a half years. The replanted tooth is lost by absorption of the root by cells which seem at one time to perform the functions of odontoclasts (tooth absorbers), and at another that of osteoblasts (bone formers). Perhaps a fresh set of cells with bone-forming functions follows them, and fills in the spaces they have hollowed out. However this may be, a replanted tooth is held firm partly by cicatricial contraction of the gum, and partly by invasion of irregular

processes of newly-formed bone. The tooth must be aseptic if the operation is to be followed by reasonable success.

On injecting the head of the cock, into the comb of which Hunter had implanted a canine tooth with a widely-open apex, the tissue in the pulp cavity was found fully injected, and the same is shown in some replanted teeth in dogs' skulls in two Continental museums. This injected tissue may be granulation tissue. Replanted teeth often show a red glow when trans-illuminated, and respond to the "heat-test"; they may also keep their natural colour. But these facts are not enough to warrant our saying that there is a reunion, or a regeneration of tooth pulp, *i.e.*, of a tissue containing nerves.

*Defective Enamel.*—E. B. Spaulding describes a method of replacing the entire enamel with porcelain. The enamel of the faulty tooth is ground away without destroying the pulp, and a hollow porcelain crown is fashioned which fits over the stump of dentine left. Though thin, this hollow crown is stated to stand well. High-fusing porcelain must be used.

*Sensitive Dentine.*—To obtund sensitive dentine, E. M. Soule recommends the use of $Na_2O_2$. The cavity is washed out and dried. Some solid $Na_2O_2$ is put in and a drop of water added. Brief pain follows, but after that excavation may be proceeded with painlessly. A second application may be needed, but is less painful than the first.

*Hæmorrhage.*—J. Klein[7] recommends the use of **Stypticine** gauze as a plug in cases of hæmorrhage. According to his observations stypticine has a prolonged action, and even when the plug is left in for several days "there is very rarely any infection."

*Local Anæsthetic.*—The same writer[8] uses **Subcutin** as a local anæsthetic, in alcoholic solution, to clean up the field before extraction, and dull the pain of the hypodermic needle, and in combination with cocaine in watery solution hypodermically.

*Lingua Nigra.*—S. S. M. Farlane[9] records a case of lingua nigra associated with gingivitis. The tongue was not painful, but the gums were badly inflamed. An identical fungus was obtained both from the tongue and gums.

*Tumours of Dental Origin.*—J. G. Turner[10], dealing with tumours and inflammatory neoplasms of the jaws, includes most forms of new growth of the jaws as possibly dependent on teeth. Chondroma dependent on teeth he has not yet observed.

C. W. Glassington[11] thinks it unnecessary in cases of simple epulis to extract the adjacent teeth; it will be enough to remove the bone at its base.

*Movement of Teeth in the Jaws.*—J. G. Turner is of opinion that the movement of teeth in the jaws, including the movement of eruption, is brought about by the agency of the growth of the bone. He cites the forward movement of the second and third maxillary molars after early extraction of the first molar, and the backward movement of

the mandibular second pre-molar, which will take place in the body of the bone before eruption, after early extraction of the mandibular first molar; and the crowded, irregular dental arch of adenoid cases in which growth fails, as evidence of the dependence of the position of teeth on the growth of bone. In children from the age of four or four and a half years onwards the temporary front teeth become gradually spaced, carried forward by growth of the bone. If this spacing fails, some cause of want of growth should be sought. Most frequently this is adenoids.

REFERENCES.—[1]*Dent. Cosmos*, Oct. 1904; [2]*Brit. Jour. Dent. Sci.*; [3]*Dent. Cosmos*, Mar. 1904; [4]*Brit. Jour. Dent. Sci.* Jan. 15, 1904; [5]*Ibid.* Sept. 1, 1904; [6]*Dent. Rec.* Jan. 1904; [7]*L'Odontologie*, No. 21, Nov. 15, 1904; [8]*Ibid*; [9]*Dent. Cosmos*, Jan. 1904; [10]*Pract.* May, 1904; [11]*Med. Brief*, No. 2, Feb. 1904.

**DERMATITIS.** *Norman Walker, M.D.*

J. C. White[1] gives a collected list of agents causing dermatitis by contact; among these are hair dyes (aureole), phenyl hydrazin, orthoform, salol, resorcin, pyoktanin, creolin, iodvasogen, kerosene, electricity, hyacinth, coccus wood, heracleum giganteum, cotoneaster microphylla, humea elegans, poison ivy, and Virginia creeper.

Myers[2], in the case of a female baby six months old, found that 2-gr. doses of bromide every three hours produced a rash in two days. The special points of the rash, which was like varicella, were that the dose of the drug was small, that the height of the eruption was not reached till eleven days after the bromide was stopped, that new lesions continued to appear for four weeks, and that a lesion appeared on the tongue.

Leslie Roberts[3] narrates an instance of antimonial and lead poisoning in a linotype printer, who showed the following signs and symptoms: (1) Hyperidrosis of the palms, soles, and head; (2) Smooth, flat papules on the hands; (3) Tenderness on pressure of the palms and soles; (4) Trembling of the muscles of the upper extremities; (5) Chronic constipation; (6) Absence of colic, vomiting, or other evidence of intestinal disturbance; (7) Urine showed no albumin, sugar, or antimony, but contained lead. Sections of the papules were made, but these exhibited no leucocytosis or signs of inflammation, although there was distinct stimulation and thickening of the epithelium.

Barnard[4] gives a very full account of tar dermatitis and its sequelæ. The workers always get splashed with hot tar, and those who wash carefully at night generally remain free. He says, "The great reason for the peculiar results of tar irritation appears to be that the boiling fluid is an ethereal solution, and therefore rapidly penetrates the garments of the workers, and soaks into the skin along the rods of fatty matter in the sebaceous glands"; and again, "Progressive results appear as age advances, and these may be conveniently divided

into seven stages in a crescendo of malignancy: (*a*) Tar eczema; (*b*) Tar warts; (*c*) Tar molluscum; (*d*) Crateriform ulcer; (*e*) Benign epithelioma; (*f*) Lymphatic infection; (*g*) General dissemination. Eczema may appear early, and at the age of thirty to forty, molluscum begins. These lesions grow rapidly, and although from a medical point alarming, are treated with indifference by the workers, as in nearly all cases the tumours fall out. Microscopically they consist of exuberant epithelium with extensive fibro-elastic reaction underneath, cutting its blood supply off, and leading sometimes to the crateriform ulcer. The factors producing malignancy are, he considers, a stimulus to epithelial growth and a diminished resistance to penetration by the epiblast on the part of the mesoblast. The stimulant may be some product of distillation of organic matter, *e.g.*, soot, pipe smoke, shale, or fuchsin. Apropos of this theory he points out that the greater frequency of carcinoma in the great gut near the sigmoid may be connected with the production of indol, skatol, and phenol compounds, which are all of the benzene group.

Hyde and McEwen[5] give a summary of the dermatoses occurring in exophthalmic goitre; these they class as accidental, distantly related to the disease, or intimately related. One hundred and eleven reports have been made; the commonest affection of all was hyperidrosis, while pigmentary changes, myxœdema, and simple œdema are moderately common; other skin affections, such as scleroderma, alopecia, vitiligo, etc., being rarer.

Dermatitis coccidoides is discussed by Douglas Montgomery and Howard Morrow[6], chiefly to distinguish it from blastomycetic dermatitis. On culture media the organism differs only slightly from that of the latter disease. In the tissues, endogenous spore formation characterizes coccidoidal forms, while budding is characteristic of blastomyces. The prognosis is always bad, as the disease affects internal organs. Blastomyces affects the eyelids mostly, and disappears under the administration of **Potassium Iodide.**

References.—[1]*Amer. Jour. Cut. Dis.* Oct. 1903; [2]*Ibid*, May, 1904; [3]*Brit. Jour. Derm.* July, 1904; [4]*Polycl.* April, 1904; [5]*Amer. Jour. Med.* June, 1903; [6]*Amer. Jour. Cut. Dis.* Aug. 1904.

## DIABETES INSIPIDUS.

*Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

From a review of ten consecutive cases of diabetes insipidus, E. Pribram[1] concludes that cases included under this name vary very considerably, and that a large number of them are dependent upon grave cerebral disease. From experiments made in three cases he believes that fluid ingested is excreted more slowly than normal, and that, in fact, the kidneys secrete more uniformly and are less affected by sudden variations in the quantity of fluid absorbed, than under physiological conditions. He found that most of the cases improved under **Ergotine,** but none were cured.

Sollier[2] has recorded a case of a young woman who had suffered from polydypsia and polyuria for eleven years. It was said to be caused by a sensation of burning in the œsophagus, the effect of an acute hysterical attack which developed at the age of seventeen. The burning was relieved by drinking cold water. The patient was completely cured by isolation, rest, and massage in a sanatorium; she had been accustomed to drink from 12 to 17 litres of water daily.

The value of **Strychnine** in the treatment of diabetes insipidus is urged by L. Feilchenfeld[3], who having found that hypodermic injections of small doses of strychnine given for atony of the bladder seemed to exert appreciable effect on the quantity of urine excreted by an elderly patient with prostatic hypertrophy, tried the remedy on a case of diabetes insipidus in a woman aged fifty-two, who was passing about 4000 cc. (about six pints) of sp. gr. 1002 daily. He started the treatment with injections of about $\frac{1}{12}$ gr; on the eighth day she was passing only 2500 cc.; the thirst, dryness, and other symptoms had lessened, and she had gained in strength. However, Hofbauer[4], in the discussion which took place at the Vienna Society of Medicine and Children's Diseases, found strychnine useless. In the same debate Schlesinger advocated reducing the quantity of drink allowed to a quarter of what had been used before; but such restriction must be used very cautiously, as it may be extremely cruel, and lead to horrible results. In our opinion it is better to allow patients to satisfy their thirst. We agree with Nothnagel, that in many cases thirst is the primary symptom, and that this may be diminished by the use of **Opium** given cautiously. In one of Nothnagel's cases the disease followed an injury to the head. He diagnosed pontine hæmorrhage, and the patient recovered after galvanic treatment.

All sorts of remedies occasionally appear to be followed by success, to which we may add Schmidt's experience with **Podophyllin**, which he says he has found beneficial in three cases. A. Popov[5] records 12 cases treated by **Narcotics** and such anti-spasmodics as **Belladonna, Valerian,** and **Antipyrine.** Warm baths and the **Constant Current** also gave good results, but a complete cure was rarely obtained. Of the 12 cases, only 4 were permanently benefited by treatment. T. W. Tallquist[6], as the result of the careful study of a case under treatment in the hospital at Helsingfors, has come to the conclusion that the best diet for these cases is one poor in albuminoids and chlorides; he recommends the following: bread 100 grams, butter 150 grams, mashed potatoes 500 grams, apple sauce 200 grams, sugar 75 grams, cream 50 grams, beer 600 grams, tea 250 grams, the whole containing only 4·60 grams of nitrogen.

References.—[1]*Deut. Arch. f. klin. Med.* 76 Bd. 1–3 Heft, p. 197; [2]*Presse Méd.* May 28, 1904; [3]*Deut. Med. Woch.* July 30, 1903; [4]*Sem. Méd.* p. 86, 1904; [5]*Ibid*, p. 308, 1903; [6]*Zeits. f. klin. Med.* xlix. 1–4.

## DIABETES MELLITUS.

*Prof. R. Saundby, M.D., M.Sc., LL.D, F.R.C.P.*

In a discussion on diabetes, held at the Annual Meeting of the Medical Society of the State of New York[1], Dr. R. M. Pearce, of Albany, said that in only half of all cases of diabetes could gross lesions of the pancreas be found. There were two definite forms of chronic pancreatitis: (1) Interlobular; (2) Interacinar. The latter invaded the islands of Langerhans; in the former, diabetes practically never occurred, but in the second it was present in one out of twenty. He had collected 23 cases of cancer of the pancreas, in only 3 of which glycosuria was present; 2 were typical cases of diabetes; in these the cancer was in the head of the pancreas, and obstructed the pancreatic duct; in both also there was distinct involvement of the islands of Langerhans. He had traced the development of these islands, and found that they arose from true secreting glands, but at a certain stage took on a new form and became thoroughly differentiated. Such differentiation pointed to special functions. These islands showed greater resistance than other parts of the pancreas to destructive processes. He did not believe that all forms of diabetes were due to the pancreas.

David Edsall, of Philadelphia, said it was no longer believed that there existed an important glycolytic ferment in the blood. In birds and frogs diabetes did not occur if the liver as well as the pancreas were extirpated. In birds, extirpation of the pancreas caused glycogen to disappear from the tissues, and an excess of sugar to be present in the blood, and yet glycosuria did not follow. William H. Thomson, of New York, spoke of the value of **Cod-liver Oil** in thin diabetics. F. C. Shattock, of Boston, recommended that the patient should be weighed at short intervals, and should learn in a general way the quantity of each article of diet to be taken. Strict diet should only be maintained for a month or two, and then the toleration of starch tested. In severer cases care was necessary in giving bread. Diabetic breads were generally unreliable, and none which was palatable was safe to use for any length of time. He laid stress upon the importance of warm clothing, rest of body and mind, and moderate exercise.

The hyaline degeneration of the islands of Langerhans was first pointed out and figured by the reporter in the Bradshaw Lecture delivered before the Royal College of Physicians, on August 18th, 1890[2]. Its exact relation has not yet been established, but many recent writers have shown the frequency with which changes in these structures are met with. In a recent contribution by Prof. Lancereaux[3] to the French Academy of Medicine, he pleads strongly in favour of the lesion of the islands of Langerhans as the essential change in that organ in pancreatic diabetes, and contributes four good examples to illustrate its clinical and pathological conditions, but he admits

that some cases of diabetes are not associated with pancreatic disease, and these are provisionally regarded as of nervous origin.

A recent suggestion has been made by A. Lorand that in those cases in which the pancreas is normal, the thyroid gland is in fault. In a contribution made to the Société de Biologie[4], he gives the results of some experiments, which show the reciprocal relation between the pancreas and thyroid glands: that is to say, dogs deprived of the pancreas show enlargement of the gland follicles of the thyroid at the end of two or three months, while three days after the excision of the thyroid the islands of Langerhans showed a remarkable excess, as if there had been a new formation of this portion of the gland. He also states that he has seen artificial pancreatic diabetes in a dog disappear two days after the excision of the thyroid, the parathyroid glands being preserved. The paper was referred to reporters, who found that the statements needed further confirmation. This suggestion of Dr. Lorand's may be supposed to be supported by the statement more than once repeated, that the administration of **Thyroid Gland** causes the disappearance of glycosuria. According to Macnamara[5] this result occurs only in the glycosuria of obesity. He gives Burroughs and Wellcome's small tabloids, gr. 1½ three times a day, but he sometimes increases the dose, and gives as much as gr. v three times a day.

Prof. Robin[6] points out that in diabetes, as well as in the early stages of phthisis, there is a marked tendency to a loss of the mineral constituents of the body. He thinks this demineralization is a potent cause of phthisis, and a by no means infrequent one of diabetes, and must therefore be combated, which can be done by supplying the organism with those elements which are eliminated in undue quantities by the urine. To fulfil this indication, he recommends that an increased quantity of **Common Salt** should be taken at meals, and that green vegetables which are rich in **Potash** should be ordered; lastly, that bouillon should be taken regularly, as it is a perfectly assimilable solution of inorganic salts, and contains all those substances which are necessary to the organism. He recommends the employment of potatoes as preferable to gluten bread, and as a drink allows good **Red Wine** mixed with some **Alkaline Water,** such as the Source Lardy at Vichy. In the early stages of the disease, he recommends the use of **Antipyrine,** of which from 30 to 75 grs. daily may be given. He combines it with **Bicarbonate of Soda,** and gives the powder dissolved in Seltzer water. He does not advise that its use should be continued for more than five days, and thinks albuminous urine contra-indicates it. After the antipyrine is stopped he gives **Quinine** for a week, and then **Arsenic,** preferably in the form of arseniate of soda. In the later stages he gives **Opium** and **Belladonna** and **Valerian.** With regard to the treatment at watering places, he expresses the opinion that the stout, robust diabetic does best at Vichy; Carlsbad suits those who are thin, depressed, and complain of want of appetite; while the anæmic

diabetic who is on the high road to phthisis, benefits from a residence at La Bourboule. Such a distribution is very much in favour of Vichy and equally unfavourable to Carlsbad. The thin, depressed diabetic, who complains of want of appetite, cannot be considered as a favourable subject for treatment anywhere, and is probably better at home.

REFERENCES.—[1]*Med. Rec.* Jan. 30, 1904; [2]*Brit. Med. Jour.* vol. ii. 1890; [3]*Bull. de L'Acad. de Méd.* June 28, 1904; [4]*C.R. Soc. de Biol.* Mar. 19, 1904; [5]*Lancet*, July 18, 1903; [6]*Rev. de Thér. Méd.-Chir.* June 15, 1903.

**DIARRHŒA.** *Robt. Hutchison, M.D.*

Professor Combemale[1], of Lille, strongly recommends the administration of three grains daily of **Methylene Blue** in the treatment of rebellious diarrhœa of every nature. In a case of Addison's disease, where the patient was suddenly seized with diarrhœa of a very grave type, the administration of a three-grain wafer, given at two hours' interval, and each containing besides three grains of methylene blue, twelve grains of lactose, was sufficient to immediately arrest the flux. In a similar case the diarrhœa had resisted the ordinary means—laudanum, bismuth, tannin, etc. The patient was given a grain of methylene blue three times a day for ten days, and the diarrhœa stopped. In a case of typhoid fever, where the patient had forty motions in the twenty-four hours, the blue reduced them in two days to two motions. According to Professor Combemale, methylene blue was particularly indicated in infectious diarrhœa.

REFERENCE.—[1]Abst. in *Med. Press*, Oct. 14, 1903.

**DIARRHŒA, Infantile.** (*See* GASTRO-INTESTINAL DISORDERS.)

**DIGASTROSCOPY.** *Robt. Hutchison, M.D.*

A. Cavazzani[1] describes a new method of investigating the existence and degree of gastroptosis or gastrectasis. The method is founded on the observation of Bouveret and Chapotot, that after the division of the stomach into two main cavities connected by a constricted portion, a condition sometimes found as a result of tight lacing, diaphragmatic respiration causes a gurgling sound produced by the liquid and gaseous contents of the stomach rolling from one cavity to the other.

The patient lies on a couch, bares his abdomen, and relaxes the abdominal muscles as much as possible. The observer, placing his hand at right angles to the plane of the couch, and transversely to the abdomen, exercises with the radial border of the hand a steady **Pressure** on the abdominal wall between the sternum and the umbilicus, so as to bring the abdominal wall as far back as possible towards the vertebral column. The dilated stomach is thus temporarily divided into two cavities, and when the patient breathes with the diaphragm, the observer's other hand laid flat on the abdomen can distinguish the fremitus caused by the gas and liquid passing backwards and forwards. In this manner the limits of the stomach may be rendered

perfectly clear. When the abdominal walls are thin and yielding, it is often possible to see the disturbance caused by the action of the diaphragm. The method is not invariably successful, and greater importance is to be attached to a positive than to a negative result. The author has used it for two years, and finds that it yields important evidence in the great majority of cases, while it causes no inconvenience to the patient. In many cases, after the size of the stomach has been estimated by digastroscopy, the estimate has been proved to be very exact by insufflation through the œsophageal tube. The method is liable to fail in cases of complete ptosis of the stomach, and in the very rare cases where the dilated stomach is completely empty of gas and liquids. It cannot be applied very well when the abdominal walls are very thick. An excessive dilatation of the colon may also be a source of error in very rare cases, though the author has not found it to be so in any of those tested by the use of the œsophageal tube.

REFERENCE.—[1] Abst. in *Brit. Med. Jour.* April 23, 1904.

**DILATATION OF HEART.** (*See* HEART.)

**DIPHTHERIA.** (*See also* VINCENT'S ANGINA.) *E. W. Goodall, M.D.*

The practitioner is sometimes at a loss to know how to act with respect to notification and isolation in the case of persons who are the subjects of some form of sore throat which is not clinically diphtheria, but from which the diphtheria bacillus has been obtained in cultivations. Further, ought any action to be taken with respect to those persons who, though in good health, are found to be harbouring diphtheria bacilli in their throats? A considerable number of such persons will be found amongst those who have been brought into contact with patients suffering from diphtheria: indeed, a few (1 or 2 per cent) will be found amongst the general population, where diphtheria is at all prevalent, exclusive of those who have been brought into known contact with the disease. Newman, M.O.H. for Finsbury[1], in a paper in which he discusses these questions, advises that the following line of action should be followed:—

1. In the presence of a case of doubtful clinical diphtheria, bacteriological examination of the throat should be made. If the result be positive, the case should be notified, and where home isolation is impossible or impracticable, the case should be isolated in hospital. If the result be negative, a second, and, if necessary, a third, examination should be made.

2. Persons (*i.e.*, patients) isolated in a hospital should not, as a rule, be discharged until their throats are clear, *i.e.*, free from diphtheria bacilli, however convalescent they may otherwise appear to be. Two or more negative examinations are usually necessary.

3. In the event of clinical diphtheria, supported or unsupported by bacteriological examination, the throats of other persons in the house should be examined for the *B. diphtheriæ*. If the result be

positive, such persons, if not suffering from clinical diphtheria, should be isolated at home until their throats are clear. If the result be negative, their throats should be re-examined in due course.

4. It is unnecessary to add that the early use of **Antitoxin**, both as a therapeutic and as a prophylactic agent, is to be recommended.

TREATMENT.—Biernacki and Muir[2] give an account of their experience in the treatment of laryngeal diphtheria by **Intubation** at the Plaistow Free Hospital. The 70 cases are divided into five groups:

1. Cases not intubated on admission, but after a varying time for progressive obstruction; 23 cases with 6 deaths.

2. Cases admitted with moderate obstruction, requiring intubation subsequently for a paroxysmal exacerbation; 2 cases with no deaths.

3. Cases admitted with obstruction already sufficiently developed to require immediate operation; 37 cases with 11 deaths.

4. Cases admitted *in extremis*; 6 cases with 3 deaths.

5. Cases with only moderate obstruction, but with progressive asthenia, and especially a tendency to circulatory failures; 2 cases with 1 death.

The following are some of the conclusions arrived at by the authors: In private practice tracheotomy is to be preferred to intubation, post-operative emergencies being more frequent after the latter than after the former measure. In hospital practice intubation throws less work on the nursing staff, both in preparation and after-treatment. Intubation is easier to perform than tracheotomy, after a little experience. In rare cases of diphtheria œdema of the larynx may render intubation impossible. No force must be used in inserting the tube.

Against the dangers of tracheotomy, which even the experienced operator may encounter, are to be placed, in the case of intubation, the partial asphyxiation from gagging and inserting the tube, and the possibility of actual blocking of the trachea by dislodged membrane. The tracheotomy instruments should always be at hand.

Amongst the contra-indications to intubation are:—

(*a*). Severe involvement of the fauces and nasal passages. The course of cases of this kind occurring amongst the 70 treated by the authors suggests that possibly tracheotomy may be preferable to intubation, "not necessarily because the operation (intubation) may fail to relieve, but rather owing to a special vulnerability of the tissues. We are inclined to believe that such vulnerability is a characteristic of septic cases in which the main infection extends to the larynx. In such cases it will be necessary to weigh the risks of tracheotomy, with or without chloroform, against the possibility of ulceration from the intralaryngeal tube."

(*b*). Palpable œdema of the upper part of the larynx.

(*c*). The presence of membrane low down in the trachea. This cannot be diagnosed with certainty apart from the coughing up of membranous casts of the trachea. Moreover, such casts may be

expelled in intubation cases when tracheotomy has not been performed.

(*d*). A moribund condition referable to obstruction.

Tracheotomy will usually have to be resorted to (after intubation) in cases: (1) Where the membrane extends; (2) Where the tube repeatedly becomes choked; (3) Where there is intolerance of the tube. "As regards the last, it cannot be doubted that frequent re-insertions are exhausting to the patient, and may possibly cause injury to the larynx."

The authors are of opinion that the tube should be removed on the fourth day at the latest, and left out if possible. The employment of steam and sedatives are of use as aids to doing without the tube. If, by the tenth day, the tube cannot be dispensed with, tracheotomy should be performed. They prefer to leave the thread attached to the tube, restraining the patient's hands to prevent him from pulling it out. [This is the only point on which I disagree with their practice and conclusions. Their observations confirm my experience at the Eastern Hospital, for which see previous numbers of the *Annual*.—E. W. G.]

REFERENCES.—[1]*Pract.* Nov. 1903; [2]*Brit. Med. Jour.* May 14, 1904.

**DIPHTHERIA (in the Tropics).** *J. W. W. Stephens, M.D.*

Castellani records a case in Ceylon, and quotes statements as to its occurrence in the tropics. The disease occurs in North Africa, Tunis, Tripoli, Egypt; in South Africa it is more frequent. In Central Africa, Uganda, British East Africa it is absent (Cook and Moffatt). It occurs in Cameroons (F. Plehn). In tropical and sub-tropical America cases are few (Clemow). In Mexico, Central America, West Indies, and British Guiana it is rare. It is unrecorded from Siam. In Malaysia it is exceptional. It occurs in China. In Java it is unknown. It occurs in Madras (Cornwall) and in Ceylon (Perry, de Silva, Castellani).

**DISARTICULATION (Knee & Elbow).** *Priestley Leech, M.D., F.R.C.S.*

A. G. Miller[1] again recommends a circular incision in this operation; this method of amputation secures a long, single flap by a circular cut; this is due to the fact that on division, the soft structures on the flexor aspect of a limb, contract more than those in the extensor aspect.

The method of procedure is as follows: Hold the limb quite straight, make a circular incision below the condyles (1½ inches in the arm, 2½ in the leg) down to the deep fascia. The skin on the flexor aspect (anterior in the arm and posterior in the leg) at once retracts considerably, making the line of incision oblique. The extensor flap is now dissected up as far as the head of the tibia in the leg, and to above the olecranon in the arm, care being taken to cut on the deep fascia and so to reflect the subcutaneous cellular tissue and its contained blood-vessels along with the skin. After reflexion of the

flap, disarticulation should be performed from the front (the patella being saved in case of the knee). The semilunar cartilages will probably be removed attached to the head of the tibia. It will then be found that there is a long flap on the extensor aspect (anterior in the knee, posterior in the elbow) with practically no flap at all on the flexor aspect of the condyles. When the flap is folded over and stitched a nice stump results.

The advantages claimed for this method are: Simplicity, rapid and easy performance, and there are no elaborate details to be remembered; the skin flap is well accustomed to pressure and to the situation in which it is ultimately placed over the condyles; the cicatrix is in a most favourable position, and much tissue is not required.

REFERENCE.—[1] *Scot. Med. and Surg. Jour.* Sept. '904.

**DISINFECTION** (**Hands, Sutures, etc.**) *Priestley Leech, M.D., F.R.C.S.*

Ryerson Fowler[1] read a paper on the "Skin as a source of Wound Infection." Hoegler[2], after a twelve years' study, had published a volume of 200 pp. on this subject, and among the facts he brought out two are worthy of the surgeon's attention: (*a*) Bacterial proliferation does not take place in the deeper portions of the healthy skin, but bacteria are eliminated to a greater or less extent by the normal secretions of the skin; (*b*) After the most thorough cleansing, etc., as shown by a sterile condition of the surface of the skin, micro-organisms find their way under favourable conditions to the surface. These favourable conditions are similar to those which obtain in the field of operation and upon the surgeon's hands while engaged in his work, *viz.*, immersion in warm blood-serum.

It was also shown that agents possessing an astringent influence on the skin prevented migration of bacteria from the depths to the surface, and that this migration takes place very readily under the influence of warmth and moisture, aided by influences irritating to the skin. The occurrence of abrasions, cuts, etc., from tying ligatures, and the eczematous conditions of the skin caused by attempts to disinfect it, all give more favourable conditions for the multiplication of bacteria. Experiments have shown that cultures taken from the knife making the skin incision give positive evidence that infection from the edges of the skin wound is most prolific; even using a second knife for the deeper parts does not avoid this, as it is difficult to cut exactly through the skin and no further. The operator's hand may also become infected by the edges of the skin wound, and may easily carry infection into the deeper parts of the wound.

Judging from the results of bacteriological experiments, Fowler says it would seem practically impossible to render and maintain the hands sterile for the time required for the average operation. There is yet no sure method of sterilizing the depths of the skin. He has tried painting the surface with tincture of iodine, and also staining

the skin with permanganate of potash and removing the stain with oxalic acid; at present there is no bacteriological confirmation of any definite superiority of these over the best of the methods at present employed. The following routine is used by Fowler:—

1. The finger-nails are trimmed and filed as closely as possible consistent with the preservation of their use in aiding the tactile sense.

2. The hands are then washed in the ordinary way with tincture of green soap and warm water without the aid of a brush, one hand being employed to wash the other.

3. The spaces beneath the nails are then scraped with a blunt, not a sharp, instrument, in order to loosen the dirt beneath the nails which has been previously softened by the preliminary washing.

4. The nail spaces are now cleansed by a special nail-brush, which consists of a small wire brush stretched in a frame. The wire brush is made of two strands of wire twisted together, with bristles of brush material or cotton worked into the twists. These wire brushes are sold in lengths as smoking-pipe cleaners. The short length of brush is easily removed from the frame, and, being quite inexpensive, can be frequently renewed without great cost.

5. The ordinary hand-brush, properly sterilized, is now used to scrub the palms of the hands and the ends of the fingers, including the entire finger-nails. The backs of the hands, where eczematous conditions are apt to arise, and the arms as well, are cleansed with a folded square of gauze used as a wash-cloth. Running water, only lukewarm, is used throughout.

6. All traces of soap are now rinsed off in a lukewarm 1–2000 perchloride solution, after which an alcoholic solution of the same strength is used. With the aid of gauze the alcohol is rubbed in and about the matrix of each nail separately.

7. The further steps now depend on the character of the work in hand. If the hands have been recently exposed to unusual infection (*e.g.*, a pus case) additional precautions must be taken to prevent the migration of bacteria from the depths, and if the case to be operated on be septic, provision must be taken to prevent infection of the hands. When the hands have been recently exposed they should be thoroughly stained (two minutes' immersion) in permanganate solution, and then decolorized in a hot saturated solution of oxalic acid. (The operating nurses keep on hand powders containing 2 ounces of permanganate of potassium to $7\frac{1}{2}$ grains of corrosive sublimate, and one powder dissolved in a quart of hot water makes the required solution.) The addition of a half ounce of strong ammonia water to a quart of sterile water neutralizes the acid, after which the ammonia solution is washed off in the bichloride solution. The hands are again deeply stained in the permanganate and bichloride solution, and this stain is permitted to remain. During the operation it is of supreme importance to dip the hands at least every five minutes

in a *cold* solution of sublimate. In septic cases the bleaching in oxalic acid before the operation is omitted, and this is also done in clean cases where the hands have not been exposed to infection. The stain prevents the passage of micro-organisms from the depths of the skin of the hands to the surface.

In Fowler's experience the use of **Rubber Gloves** in cases in which manipulation is required, is impracticable. The constant risks of tearing or puncturing the gloves, thereby permitting the bacteria-loaded emulsion of *débris* from the skin resulting from the poulticing effects of the gloves, to escape through the opening, is a contra-indication to their use in aseptic cases. They may be used to advantage in septic cases and in examination of septic cavities, etc., for the protection of the surgeon's hand, and they may also be used when wounds or other septic foci exist upon the hands of the operator or his assistants. But so far as protecting the patient they are useless, besides being expensive.

Goepel[3] says that in view of the fact that rubber gloves tear easily and that thread gloves are very permeable, it is a good proceeding to wear the latter over the former. The advantages claimed are: Greater safeguard against infection; the hands can be used more freely; the gloves can be rapidly changed; the use of thread gloves does away with the slipperiness of the rubber, and ligatures can be tied more easily; time of operation shortened; repeated washing of the hands is unnecessary, as the gloves can be scrubbed while on the operator's hands, and this prevents chapping or eczema.

Lockwood[4] thinks it has become too much the fashion to ignore *aerial* infection. He has found solutions of **Hydrogen Peroxide** far more efficacious than mercurials in the treatment of horribly fœtid appendicular abscesses and for similar ones about the middle ear, used in 5 to 10 per cent solution. He has found it practically impossible to complete an operation without tearing or puncturing the fingers of the gloves, and the use of gloves also impairs the sense of touch; for operations upon septic cases gloves should be worn, and especially if other cases are impending. The patient's skin, after being disinfected, was tested fifty-five times, and infected the broth in fourteen cases. The hands of the operator were tested, and gave three septic tests out of a total of 111. The degree of certainty with which the skin of the patient can be disinfected depends upon the region; they may be placed in the following order: Limbs, abdomen, breast, neck, the back, the groin and axilla, scrotum, and scalp.

As is seen from the above results, the patient's skin is much more difficult to disinfect than the surgeon's hands. His method of preparing the skin is: Trim nails, use hot soap and water and a soft scrubbing brush for at least three minutes, and then soak in spirit and biniodide (75 per cent spirit, 25 per cent water, and 1–500 in this solution of biniodide of mercury). During the course of an operation

the hands are frequently rinsed in 1–4000 biniodide of mercury, or 1–10,000 for operations about the face and eyes.

Dr. Amyot[5], bacteriologist to the Ontario Board of Health, conducted some experiments in the sterilization of **Brushes and Knives.** Three brushes were taken and washed in a strong solution of soap and carbonate of soda; one was tested without further treatment, one was soaked in a 1–20 carbolic acid solution for ten minutes, and one was exposed for fifteen hours to the vapour of formaldehyde; only the latter showed no growth. Knives were infected with *staphylococcus pyogenes aureus*, and he found they could be disinfected by exposing them to a stream of boiling water for thirty seconds, by placing them for ninety seconds in carbolic acid (95 per cent), by placing them for ten minutes in Hebra's spirit, or for forty-five minutes in 95 per cent alcohol.

Dr. Douglas Stewart[6] has tried twenty-eight methods in use, and made 3000 cultures, and no method has given such good results as the following: (1) *Five minutes' mechanical cleansing* with powdered pumice stone, brush, hot water, green soap, and wooden nail-cleaners; (2) *Five minutes' chemical cleansing*—two heaped-up teaspoonfuls of fresh (35 per cent) calx chlorata and one tablespoonful of U.S. Ph. (36 per cent) acetic acid to the pint of sterile water. If this solution stands for ten minutes without stirring, the necessary chemical changes are complete. If the solution does not instantly bleach blue litmus paper then it should not be employed, for in such a case the chlorinated lime is below standard, or has been allowed to stand uncovered. In sterilizing the vulva a solution one-third of this strength should be used. Further experience has shown that, except for anthrax, one teaspoonful of acetic acid and two of lime to the pint of sterile water are sufficient.

Peyton Beale[7] has found **Lysoform** very useful as a deodorant (1–40) for gangrene and foul appendical abscesses. As a mouth-wash (1–60) he uses it in cases of carious teeth and tooth abscess, necrosis of jaw, and in quinsy, and it is good for sterilizing the skin, which may be well rubbed and scrubbed with the pure fluid for two or three minutes. It must be diluted to the strength required just before use, and not mixed with water above 95° F., as the formalin comes off rapidly.

*Ligatures.*—Sir William Macewen[8], in his address in Surgery to the British Medical Association, spoke of the choice of suitable material for ligatures and sutures. The requirements which ligatures and sutures ought to possess are asepticity, the power to remain in the tissues for a time sufficient to effect their purpose, and to be then capable of rapid elimination. Living tissue can only be made to adhere permanently by a living bond of union, and the idea that living tissue can be kept permanently in apposition by any other material than living tissue is erroneous. A suture of dead tissue can only secure coaptation of two living surfaces for a limited period—a period

sufficient in the majority of instances to enable the living tissues to become united. When such union fails to be produced for any reason, the living tissue gives way by absorption in front of the pressure exerted by the dead suture ; this absorption goes on until there is no more traction by the suture—until a position of rest is obtained, when the suture lies loose in the tissues ; and when this stage has been reached the dead suture is of no further service, but remains at best a useless foreign body, and may become dangerous. The same thing happens where bones are sutured with wire or united by pegs ; at first they are tightly fixed in the bone, but in fourteen to twenty-one days absorption takes place round the pegs and wire, and these become more or less loose. In a skin wound, seven to fourteen days are necessary for union if there is no tension or traction on its edges ; a cutaneous stitch would thus be required to maintain apposition for a week to ten days. In the case of divided tendons, muscles, and aponeurosis, a suture which would maintain them in contact for three weeks is necessary. It must also be borne in mind that when union of aponeurosis or other like structures is dependent upon extensive fibrous tissue formation, such fibrous tissue, after its formation, is liable to stretch for fully six weeks, and therefore during that time ought not to be subjected to strain. Fractured or divided bone placed in favourable circumstances heals as readily as aponeurosis, but requires a longer time for union ; shafts of long bones subject to powerful leverage require longer fixation than shorter ones not subject to such strain. At the end of three weeks a softening process has begun at the point where the suture has exerted pressure on the bone, and this softening process continues slowly until the bone in front of the pressure is absorbed, and the suture, lying loose and exerting no further traction on the parts, remains there a functionless foreign body. The mere presence of a suture in a fracture, unless osseous union has occurred, will not prevent the separation of the fragments. Sterilized silk is practically non-absorbable, as are also silkworm gut and hair. Tendons of deer and kangaroo, though absorbable, resist the action of the tissues many months.

Catgut is one of the best substances generally available for sutures and ligatures. Raw catgut is chosen, the specimens which show the best physical properties being selected. One of the best media for hardening it is obtained by adding an aqueous solution of **Chromic Acid** to **Glycerin** in definite proportions. This acts on the catgut so that it becomes more resistant to the action of living tissues ; the longer it is kept in this solution the more resistant it becomes. After it has been thus prepared it is stored in a carbolized glycerin solution ; it is ready for use after a fortnight's storage in this solution. Crystals of chromic acid when added to glycerin cause violent ebullition or an explosion ; to avoid this the following solutions are made : *A solution :* Chromic acid 1 to 50 water ; dissolve thoroughly

and only use the clear solution. *B solution :* Take 1 part of *A* solution to 5 parts of glycerin. This gives rise to a dark-greenish or brownish compound with the evolution of heat. This compound, immediately after preparation, is poured over the loose catgut previously arranged in a suitable vessel, all air-balls which may be adhering to the gut being carefully removed. The catgut is completely immersed in this solution, and it is kept covered by it (being stirred occasionally) for a period sufficient for the end in view—one to ninety-six hours. The catgut is then removed from this solution, rinsed in sterile water to free it from the jelly-like compound, stretched, and wiped with a sterile, hard towel to remove any of *B* solution that may adhere to its surface ; otherwise the action of *B* solution would continue. After stretching, the catgut is wound on rods at least 3 inches in length, and preserved in a storage solution made up of 1 part of carbolic acid to 5 parts of glycerin ; after a fortnight's stay in this solution it is ready for use. If not to be used for six months or a year later, stir in 1 part of carbolic to 20 of glycerin, as this weaker solution does not harden the gut so quickly. Just before application of the gut as a stitch or ligature, it is removed from the storage solution and dipped in absolute alcohol, which removes superfluous glycerin ; water will do the same, but it softens the catgut. Any degree of hardness of the gut may be produced by keeping it a longer or shorter time in the *B* solution. For superficial sutures where there is no tension, catgut No. 00 is used and kept one hour in *B* solution ; such catgut will hold the tissues together for from four to eight days ; for muscles and aponeurosis to be held in apposition for a fortnight, use No. 2 to 4 catgut kept in *B* solution for forty-eight hours ; when the parts are to be kept in apposition for twenty-one days the gut (No. 3 to 6) is kept in solution for ninety-six hours.

Absorption of catgut in the tissues is retarded by avascularity of the tissues in old and weak people, and over-tension of the sutures ; when the tissues are avascular, or if their vitality is lowered (*e.g.*, in the midst of a slough), the gut may remain unacted on for some time, the leucocytes not being able to penetrate the tissue to reach the suture ; repeated movement of the suture ; septicity in a wound retards absorption by weakening the tissues, and by degenerating and destroying the leucocytes. An impervious suture answers best in the midst of suppuration. Chicken-bone drainage tubes and strands of catgut may remain unabsorbed in the midst of fluid for some time, but if they come in contact with the living tissue they become absorbed at the point of contact. Leucocytes are the active agents in the absorption of foreign bodies in the tissues.

Lockwood (*op. cit*) thinks on the whole there is nothing better than twisted silk for buried sutures and ligatures. It was formerly used too thick, but 00 is sufficient for ordinary ligatures, and No. 3 or 4 is seldom necessary. Muscle, however, is intolerant of silk, and tying

the sutures tightly makes it more intolerant. For septic wounds he invariably uses catgut, also where there is a suspicion that the wound is tuberculous. Silkworm gut is, he says, difficult to sterilize, and ought to be boiled for at least half an hour. He has tried the use of silver foil and wire as recommended by Dr. Jas. C. Bloodgood[9], but the wire gave trouble afterwards in some cases; the foil, however, is useful, and the wounds are very dry and free from trace of œdema and redness. The silver leaf or foil is the kind which is used for gilding frames, etc. This is placed in a flat metal box, and sterilized with dry heat until the thin paper between the leaves is slightly charred. This layer of silver foil is supposed to retard the growth of the skin bacteria; it helps to exclude air infection, and it separates the antiseptic dressing, if one be used, from the wound. He often used an outside dressing as in the original Listerian dressing, especially about the scrotum, axilla, and abdomen.

Anglin Whitelocke[10] recommends the use of absorbable ligatures in operations on bone, and gives cases where he used it in fractured patella. He uses catgut, which is passed through the ligamentum patella from without inwards to the under surface of the distal fragment; it then traverses the joint to the under surface of the proximal fragment, and is brought through the quadriceps tendon from within outwards He puts two or more similar sutures in. It may be used also in fractured olecranon.

Hammersley[11] has used a ligature made by a special process from numerous **Cocoon Fibres**; it may be obtained from Maw & Son, and has the following advantages over silk twist: Greater strength; more easily sterilized; keeps indefinitely; does not slip when tied; ready temporary encapsulization; and perfect after-absorption.

Marcy[12] uses buried absorbable sutures, preferably tendon, and says in 1500 laparotomies he has had but a single subsequent hernia. Claudius' method of sterilizing catgut (noticed in last year's *Annual*, p. 283) is well spoken of by Senn, of Chicago[13], Martina[14], Giannettasio[15], Menoni[16], and Moschcowitz[17].

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## DISLOCATIONS.

*Priestley Leech, M.D., F.R.C.S.*

*Humerus.*—MacDonald[1] reports a case of the somewhat rare dislocation of the humerus, the luxatio erecta. On measurement from the point of the acromion to the condyle of the humerus on either side, an increase of half an inch in length was found on the injured side; the accident was caused by being dragged by a horse along the ground, the right hand holding the reins.

Mansell-Moullin, and A. Keith[2] report a case which is believed to be unique, *viz.*, backward dislocation of the humerus caused by muscular action. The patient, a rather stoutly-built but muscular man of middle age, was playing tennis. Trying to take a ball breast-high with a back-handed stroke, he missed his aim, and instantly his arm dropped by his side useless, and he was seized with violent pain in the shoulder. The patient was anæsthetized, and as soon as the muscles were relaxed the arm was slightly abducted, drawn downwards, and rotated outwards; the head of the bone slipped in at once, and the patient made a perfect recovery. The head of the bone was caught behind the posterior lip of the glenoid fossa and held there. Probably the capsule was not torn, or not torn sufficiently for the head of the bone to slip through; the subscapularis was tensely stretched across the glenoid fossa, and as soon as the head of the bone was dislodged by external rotation, combined with adduction and traction downwards, dragged it suddenly back into its place.

*Shoulder Joint.*—Keetley[3], in a lecture on old, unreduced dislocations of the shoulder-joint, thinks that Kocher's manipulation method and Astley Cooper's method of extension (with the heel in the axilla) are the best methods of reducing dislocations of the humerus. These measures frequently succeed in old dislocations as well as in new, especially if used with skill, patience, and perseverance. The prognosis as regards reduction in old dislocations is very good up to the ninth week (84 per cent being reduced up to this date), but it is not good afterwards.

There appears to be a special danger attached to the administration of **Chloroform** for the reduction of dislocation of the shoulder-joint. Marchand collected the records of 134 deaths from chloroform, of which no less than 11 occurred in reducing dislocations of the shoulder: ether or gas is better. If the patient struggles when the reduction has commenced one of two courses should be pursued: (1) Proceed to reduction without any more anæsthetic at all being administered, hoping to effect the reduction quickly; or (2) Desist altogether, while the anæsthetist, carefully avoiding all hurry, should patiently and watchfully get the patient well under.

Another risk is that of ruptured vessels; this accident has occurred even when slight force has been used, and it must be remembered that even with a perforated axillary artery there need be no loss of the radial pulse at the wrist. There is also sometimes little or no pulsation of the large axillary swelling, which forms and usually keeps increasing, and is accompanied by pain in the arm which may become severe, and by the general signs of hæmorrhage; and a bruit is not always present.

Injury to nerves may also occur, and fractures may complicate the dislocation. The most common is where the greater tuberosity is broken off; the next is fracture of the surgical or anatomical neck;

and less frequently, fractures of the head of the glenoid fossa. When reduction does not take place, a certain amount of usefulness of the arm ensues, but it is always a disability.

The TREATMENT of old unreduced dislocation is, on the one hand, to make the best of the false joint by exercises, massage, and electricity; and, on the other hand, in attempting to: (*a*) Effect reduction by means of manipulation or extension; (*b*) Open incision; (*c*) Excision. Subcutaneous division of soft parts has been superseded by open antiseptic operation.

(*a*). Attempt at reduction without cutting may reasonably be tried up to the end of the fourth month, except in old people with atheromatous arteries. **Kocher's Method** should be first applied, without anæsthesia, and then if it fails, with ether or with chloride of ethyl. It must be remembered that it is *not* involuntary muscular contraction which makes the difficulty, but the anæsthetic is given to prevent pain, and need not always be pushed to the most profound depth. If Kocher's method fails, extension and circumduction may be tried; the means of counter-extension should not press upon the folds of the axilla. Extension should be made in four directions: (1) In the line of the humerus downwards; (2) Counter-extension upwards; (3) From the upper part of the humerus, just below the insertion of the pectoralis major, outwards; and (4) Counter-extension to force (3) from the side of the chest across the thorax. If a machine be used, Keetley's fracture machine will do, but *a dynamometer must be employed*, as a force of 100 pounds is the outside which should be allowed, even for a strong man, and the force should be able to be released immediately.

In case of rupture of the axillary artery, associated with dislocation of the shoulder, Keetley says he would be disposed to: (1) Place a temporary ligature on the subclavian; (2) Clear blood and clots out of the axilla, and tie any branch of the axillary found torn, or the axillary itself if it was torn in two or nearly in two, but leave it untied if there was merely a small oval hole in it, and close the hole by suture; in any circumstances pack the axilla carefully with antiseptic or aseptic gauze.

The modes of applying extension are: Manual force, old-fashioned pulleys, machine extension, elastic extension, and the use of Stimson's perforated couch.

(*b*, *c*). *The open operation* for unreduced dislocation of the shoulder-joint is very liable to become septic. Unless the patient is obviously young and healthy, not only should his urine be examined, but two or three drachms of blood should be withdrawn from some small vein and subjected to the blood-freezing test; if this does not give a satisfactory result, either do no operation at all, or, if in consequence of painful pressure on nerves and vessels, etc., an operation is necessary, only do the simplest kind, *e.g.*, resection of the head of the humerus

through an ample incision. Special care must be taken to obtain asepsis. The incision recommended is a long skin incision at the anterior margin of the deltoid just external to the cephalic vein, then separation of the most anterior fibres of the deltoid just beneath this incision, and lastly a cut 2 or 3 inches long through the deltoid, at least half an inch below the clavicle and acromion. The coracoid process should be divided and turned down with the attached muscles, and after division of any covering fat and fascia, the new capsule, etc., can be examined.

The next step depends on what has happened to the greater tuberosity. If it and the muscles attached to it are intact, the tuberosity should be separated with a chisel (this and the coracoid are to be sutured on again after reduction). If they have been torn off, the structures covering and filling the glenoid must be reflected outwards so as to empty that cavity; the long head of the biceps should be spared. The next step is to free the humeral head; in doing this keep close to the bone, as the vessels and nerves may be adherent to the head. Osteophytes round the head or anatomical neck of the joint must be trimmed by chisel or forceps; there can be no hope of a painless joint if any osteophytes are left projecting on the joint surfaces. Kocher's method is first tried in order to effect reduction; if this fails, a hook should be placed round the neck of the humerus and another round the neck of the scapula, and the assistants should pull strongly on these while the surgeon repeats the steps of Kocher's method; if this fail, the fracture extension machine may be used in conjunction with the hook round the neck of the humerus; any muscle, tendon, or fascia which seems obstructing reduction may be divided. If this fails, excise and cover the stump of the humerus (after it has been smoothed down by chisels, etc.) with gold plate to prevent its adhering to the glenoid cavity. (The gold plate is of gauge 0·75, and should be weighed before insertion and after removal. It can be obtained from Messrs. Wellby, Garrick Street, Covent Garden.) The cavity from which the head has been removed should be carefully packed with a broad sheet of iodoform gauze, and not a mere strip; an ample opening should be left in the skin to permit removal of this gauze, and a small rubber drainage tube, without lateral openings, should be carried to the bottom of the wound; this tube allows lotion to be syringed down it to loosen the gauze packing at the bottom. If gold leaf be used, the gauze packing must be left in until the leaf is removed (four to five weeks); if no leaf is used, the packing may be left out in a fortnight. As soon as the wound is healed commence passive movements, and a Whiteley's exerciser may be used in a week or fortnight, but abduction should be avoided for months. He says all iodoform gauze should be kept in 1–20 carbolic lotion, which just before use should be washed out with a 1–2000 warm sublimate solution.

Professor Wolff[4] did the following operation for *recurrent dislocation of the shoulder :* Incision downwards from acromion process ; splitting of deltoid muscle ; separation of subscapularis from its attachment to the lesser tuberosity of the humerus ; excision of an elliptical piece of the capsule, and closure of the opening by catgut sutures. The subscapularis was then stitched up.

*Congenital Dislocation of Shoulder.*—Greene Cumston[5], writing on this topic, says that recorded cases are few, and most of them are inconclusive ; many appear to be simply traumatic dislocations occurring during delivery, and in these cases the condition is usually a separation of the epiphysis ; and others are instances of infantile paralysis. Congenital dislocation is more frequent in girls, while in congenital dislocation of the hip 80 per cent occur in boys ; children of the lower classes are more frequently affected. Heredity has some influence. The pathogenesis of congenital dislocations has been much discussed ; intra-uterine trauma and intra-uterine joint disease have both been credited with the causation, and also a pathological condition of the muscles resulting from an infantile paralysis ; and the last theory (due to von Ammon) refers the causation to arrested development of the joint. This last theory is the most acceptable. The pathological lesions found are : Arrest in development of that portion of the skeleton upon which the muscles take their insertions ; the muscles are atrophied ; the capsule is relaxed, very distended, and occasionally considerably elongated. Where a *post-mortem* has been held, an arrest in the development of the bones forming the shoulder-joint is noted in all. In the vast majority of cases the only satisfactory treatment will be surgical interference. He recommends Duplay's incision, as follows : A horizontal incision over the external border of the acromion, beginning just within the acromio-clavicular joint, and carried backward to the origin of the spine of the scapula. A second incision starts from the anterior tip of the first one, and is carried downward and outward, following the direction of the fibres of the deltoid muscle, to which it runs parallel. The upper lip of the horizontal incision is dissected off as far as the acromion, and the external end of the clavicle is exposed ; the acromion is then sawn through at the point of continuity with the spine of the scapula, and the clavicle is then cut through in the neighbourhood of its articulation with the acromion. The deltoid thus becomes mobilized with its upper insertion, and may be pushed aside so that the shoulder-joint is freely exposed. If this incision be too free, Ollier's anterior incision may be used. He used Phelps' incision in a case reported, but does not recommend it, nor excision of the head of the humerus.

*Patella.*—Eleven cases of slipping or recurrent dislocation of the patella are reported by Goldthwait[6]. The lesion seems to be peculiar to young girls or young women ; it appears during the period of rapid growth, and is often associated with flat-foot ; and knock-knee is some-

times present ; it may develop with or without violence. In all cases the tubercle of the tibia was displaced outwards further than normal, so that the line of pull of the quadriceps extensor contained a distinct angle. He recommends **Transplantation** of the outer half of the tendon to the inside of the tibial tubercle. A 4- or 5-inch incision is made, extending from just below the tubercle upwards ; the patellar tendon is exposed and split in halves throughout its entire length ; the outer half is freed from its attachment below, and passed under the remaining portion, and sewn to the periosteum and the attachment of the sartorius muscle at the inner side of the tibia. The leg is then fixed in a plaster of Paris bandage from the groin to the ankle, and kept so for six weeks.

*Hip.*—Gross[7] reports a rare case of unreduced dislocation of the thigh into the obturator foramen. in which, after an unsuccessful attempt to resect the displaced head of the femur, he practised infra-trochanteric osteotomy with good results. The patient obtained a straight leg, and in spite of coxo-femoral ankylosis, there is satisfactory compensating mobility of the pelvis and vertebral column. He has collected 8 cases of old and unreduced examples of the dislocation ; in 3, reduction was effected after arthrotomy (of which 2 were fatal and the result in the other unsatisfactory) ; in the other 5 the head of the femur was resected ; he thinks infra-trochanteric osteotomy is simpler and more easy than either, and is likely to be followed by quite as good results.

Dr. John Ridlon[8] read a paper before the New York Academy of Medicine as to the final results of bloodless replacements of congenitally dislocated hips. He had taken notes of 129 patients, with 158 dislocated hips. Of these 93 were operated on, and only 10 could be called perfect anatomical replacements. His belief was that of 100 cases 10 per cent would become permanently cured ; 60 per cent only partially successful ; and 30 per cent would be failures, from this treatment. Dr. Bradford, of Boston, said, out of 130 cases 40 per cent were practically cured. The subject was also discussed at the meeting of the American Orthopædic Association, where Dr. Gwilym G. Davis[9] read a paper on forcible reposition of congenital luxation of the hip. He thinks "bloodless" an incorrect term to apply to this method. He used Paci's method (the circumduction method of reducing dislocations) with tenotomy of the adductors if necessary. In the discussion which followed, it was generally agreed that Lorenz's method was of great value, but only useful in certain cases, and too much must not be expected from it ; the method was still on its trial, and many accidents had occurred due to the amount of force used. Several thought subcutaneous division would be better than forcible rupture of the muscles by the hand. Roswell Park thought the method was a failure.

H. Leng Taylor[10] has been struck by the slowness with which some

of the patients learned to walk after Lorenz's operation, and on investigation it was found that in several cases the quadriceps muscle was completely paralysed. The anterior crural nerve had evidently been injured by the manipulations. Nine instances of quadriceps palsy (three of them being double), one of peroneus palsy, and one of sciatic, were discovered among cases operated on. The paralysis begins to recover during the third and fourth month, and the prognosis seems good even without treatment.

F. F. Burghard[11] in opening a discussion on this subject concluded his remarks as follows :—

1. All cases should be checked by radiography, and no "cure" should be spoken of that is not a true anatomical cure.

2. All cases of congenital dislocation under fourteen years of age should be submitted to treatment. In the great majority of cases improvement, and in some a true anatomical cure, will result.

3. In all these cases Lorenz's manipulations should be tried in the first instance ; if they fail to effect reduction, they facilitate any subsequent procedures.

4. The prospect of a cure by Lorenz's "bloodless method" is in direct proportion to the youth of the child, and after the age of four years there is little hope of a true cure by its means.

5. In any case the chances of a true cure by the "bloodless method" are not very great.

6. An open operation should be done whenever a radiograph shows that the "bloodless method" has failed to reduce the dislocation, except, perhaps, in the case of a very young child—under three years of age—in whom the manipulations may be repeated.

7. With the open operation no fear need be entertained of shock, bleeding, or sepsis.

8. Under no circumstances should the joint surfaces be remodelled.

9. An open operation is more calculated to result in a cure, as it enables the surgeon to ascertain without a doubt when the head of the bone is really in the acetabulum.

10. The open operation is especially suited for cases over four years of age, and for those of bi-lateral dislocation.

11. After operation the limb should be put up in the position of maximum stability ; in the majority of cases this will be similar to Lorenz's position. The limb should be put up in plaster of Paris immediately, and the casing should take in the flexed knee ; this is essential to ensure the stability of the head of the bone.

12. All tense structures should be stretched or tenotomized as a preliminary measure, a week or so previously to the open operation. The after-treatment is practically identical with that of Lorenz.

Noble Smith[12] describes a splint for use after reposition in place of plaster of Paris.

Rydygier[13] holds that surgical exposure of the displaced head of

the femur is the best method of reducing an old dislocation of the hip. The technique advocated is a modification of that of Ollier. A curved incision with its convexity downwards is made over the outside of the joint; the lowest part of the convexity of the flap is placed about 7 cms. below the tip of the great trochanter (being 2 cms. lower than Ollier's incision). The posterior limb is carried upwards and backwards to the postero-superior spine of the ilium, and the anterior limb more directly upwards towards the antero-superior spine, over the interspace between the tensor fasciæ latæ and the gluteus medius. The trochanter major is chiselled through very obliquely, so that after reduction of the head of the femur the surfaces of the fragments may be brought into contact and kept there.

REFERENCES.—[1]*Brit. Med. Jour.* Aug. 8, 1904; [2]*Lancet*, Feb. 20, 1904; [3]*Ibid*, Jan. 23, 1904; [4]*Prag. Med. Woch.* p. 599, 1903; [5]*Amer. Jour. Med. Sci.* June, 1903; [6]*Bost. Med. Jour.* vol. vii. p. 169. [7]*Rev. d' Orthop.* No. 3, 1904; *Brit. Med. Jour.* July 2, 1904; [8]*Med. Rec.* Mar. 19, 1904; [9]*Ibid*, Aug. 15, 1903, and *New York Med. Jour.* May 23, 1903; [10]*New York Med. Jour.* Aug. 8, 1903; [11]*Brit. Med. Jour.* Aug. 29, 1903; [12]*Lancet*, May 2, 1903, and *Clin. Jour.* Mar. 9, 1904; [13]*Centr. f. Chir.* No. 13, 1904; *Brit. Med. Jour.* May 28, 1904.

**DRESSINGS, etc.** *Priestley Leech, M.D., F.R.C.S.*

Mr. Peyton Beale[1] recommends the use of a new film dressing named **Velvril.** It is one of many cellulose derivatives, and can be produced cheaply in the form of films of any thickness; it is transparent, slightly yellow in colour, absolutely impermeable to all ordinary gases and fluids, tough, elastic, and very durable; it can be easily sterilized by any of the ordinary dressings, and can be immersed in boiling water for a long time without undergoing any permanent change. It can be easily dissolved in acetone, and its solution in that fluid is quite unirritating even when in contact with an absolutely freshly-made wound, and it is sterile from the method of manufacture. An operation is conducted with the usual precautions, and at its conclusion a piece of the film is cut large enough to cover the incision and the skin round it for at least an inch in each direction. If a drain is to be used, an opening for it is cut in the film. The wound must be as dry as possible; if ordinary methods fail to check the oozing, washing the wound out with 50 per cent of alcohol and sterile water will be found efficacious. The piece of film is placed on a boiled cloth or towel until required for use; if the exposed surface of the film becomes moist, it must be gently dried with a piece of dry, sterile wool moistened with acetone. After the wound has been sutured, it and the skin all around are freely washed with acetone, using dry wool as before. The wound and the skin around it for an inch are painted with the velvril solution applied freely, and the film is then placed over the wound, the exposed surface next the solution. Over this is placed a pad of sterile, dry wool, and the whole bandaged firmly. The washing with acetone removes the water. If the film

is left to itself it will peel off in ten or twelve days, bringing the superficial layer of dead epidermal cells with it. If a few fibres of wool stick to the film they can be removed by wiping with a wet swab. To remove the film, place a wet cloth or swab on it for a few minutes, then by raising one corner the whole can be removed. In some cases there is an effusion of blood between the skin and film, but in few has it made any difference in the healing. If possible, where wounds have to be drained, it is better to make a separate incision for the drainage tube, removed as far as possible from the wound. When the sutures have been removed, wash with a little carbolic lotion and dry with acetone, and then paint over the stitch-holes with velvril solution. He thinks velvril may entirely supersede protective (oil silk), thin mackintosh, and gum-elastic, in surgical practice.

Fasching[2] recommends a mixture of equal parts of **Precipitated (not sublimed) Calomel and Iodoform** as a dressing for wounds. A double salt, consisting of the nascent iodides of mercury and sodium chloride, is formed in contact with the tissues. This compound is strongly antiseptic and soluble, and penetrates into every part of the wound. The calomel is first dusted over the surface, and then the iodoform, and the whole covered with sterile or iodoform gauze. In the case of abscesses or cavities in carious bone, the mixed powder is rubbed over the surface on a pledget of cotton-wool. In suppurating wounds the pus soon loses its creamy character and becomes viscid and serous, and the powder also prevents gauze plugs adhering to the wound. It is good in ulcers, and in fœtid and foul wounds.

Sharpe[3] says a compound of pure **Gum Camphor** and pure white **Crystal Carbolic Acid**, triturated together to form a thick, oily solution, is very useful as an antiseptic dressing. He has used it successfully in all parts of the body except the eye. The compound is soluble in olive oil, and may be used as a dressing in the proportion of 1–3 or 1–6 of olive oil.

Philip Bockenheimer[4] makes an extended report on the methods recommended by Schleich for the treatment of wounds. Schleich recommended the use of three substances—**Pulvis Serosus, Glutol,** and **Glutol Serum.** He finds these methods are much more costly than the ordinary ones; they are more difficult for the dressers to carry out, and where good results are obtained the same can be obtained by other methods. All three powders, when dusted over a wound, formed a closely adherent scab, which, being impervious, retained under it the accumulating secretion, thereby necessitating frequent removals and renewals. In suppurating cavities it was impossible to get the powders into all the pockets, and they formed hard cakes which could not be got out entirely, and which caused retention of the secretion in the wounds. Used in gauze, the powders simply clogged the interstices and prevented absorption of secretions of the wounds. In small aseptic wounds with little or

no secretion the powders did well. The preparations are also difficult to keep.

**Mr. Cheatle's Paste**, which is carried in collapsible tubes, is very useful for a first dressing. Its composition is as follows :—

| | | | | |
|---|---|---|---|---|
| R | Mercuric and Zinc cyanide | 400 | Tragacanth | 1 |
| | Carbolic acid | 40 | Water | to 800 |

Karl Springer[5] recommends **Paraffin** as a protective dressing in place of rubber tissue, oiled silk, etc. The technique of its application is as follows : A flat vessel provided with a cover is partially filled with water, and brought to a boiling point ; paraffin with a melting-point of 45 to 47° C. is then thrown into the water, and the boiling is continued for another ten minutes. The vessel is then placed in another dish of cold water, causing the paraffin to harden as a thin pellicle on the surface ; the vessel is then placed in water at a little above body temperature, which keeps the pellicle soft and pliable. Holes for drainage may be punctured through it with a sterile needle, and after cutting to shape it is lifted with forceps and applied to the wound with the water side down.

Tucker Smith[6] says where an ointment is indicated as a dressing, the following conditions must be fulfilled : The wound must be protected from infection from without ; the ointment must be kept in constant touch with the parts ; the dressing should come away without sticking and without damaging the newly-formed epithelium ; and the dressing should be kept on as long as possible. He says **Sterile Rubber Tissue** admirably fulfils all these requirements. The parts are first cleansed with sterile water and green soap, and dried. The ointment is then spread on, covered with sterile rubber tissue, sterile lint is placed over and secured by a gauze bandage.

Favel[7] recommends a solution of **Common Salt** and **Carbonate of Soda** as a fluid for the irrigation of wounds, and says it remains sterile for a long time. The strength of the solution is NaCl $7\frac{1}{2}$ per cent + $Na_2CO_3$ $2\frac{1}{2}$ per cent.

Luigi de Gaetano[8] uses the following method for the treatment of wounds, and has had very good results with it. He soaks his suture material in a solution of 20 drops of acetic acid to 100 grams of 70 per cent alcohol ; the sutures are dried with sterile gauze and passed from within outwards in order to avoid bringing the germs from the surface into the wound. The wound is washed with the same solution, and gauze soaked in the solution is applied to it. The dressing is renewed the third day, and the stitches removed on the fifth.

A new **Dry Surgical Dressing** is introduced by Barnes and Hille[9]. It is a pink, impalpable, odourless, tasteless, and insoluble powder, containing 45 per cent of bismuth, 15 of iodine, and 3 of formaldehyde. Its use in several hospitals is said to have given good results.

Prof. A. E. Wright[10] suggests **Formalin Gelatin** as an antiseptic and

disinfectant protective skin. A 15 to 20 per cent solution of gelatin liquefied by heat, with 1 to 2 per cent formalin added, and employed immediately after preparation, makes a firm coating when applied to a moist surface. It is admirably adapted for the arrest of hæmorrhagic oozing; it furnishes a protective antiseptic skin to denuded surfaces, and is not removed by ordinary washing. In some experiments he has carried out, pyogenic micro-organisms have been rapidly devitalized under this dressing. It might also be used to seal up operation wounds. When employed on a raw surface, a tube of sterilized gelatin is melted in hot water and applied to the wound with a brush; then a volume of formalin equivalent to a twentieth of the bulk is added to the remaining liquid gelatin, and this 2 per cent formalin must be applied before it has time to set.

McGregor and Ramsey[11] carried out some experiments to test the efficiency of some surgical dressings. Their conclusions are :—

1. The most suitable drainage material for the conveyance of fluids with solids in suspension is dry boracic lint; cellulose wadding is almost as efficient, but its friability renders it unsuitable for drainage purposes unless enclosed in a gauze envelope.

2. The best covering materials for the speedy removal of the discharge from the distal end of the drain, are cellulose wadding and gauze.

3. The covering material should be sufficient in amount to continue in action as long as the drain, and prevent saturation of the latter.

4. As the blocking of the drain (gauze, etc.) takes place in four to eight hours, a more frequent dressing than usual is indicated.

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**DYSENTERY.** *J. W. W. Stephens, M.D.*

Ford[1] divides dysenteries into three classes: (1) Bacillary); (2 Amœbic; (3) Mixed.

*General Management.*—Besides general hygienic precautions, he recommends that the dejecta should be thoroughly mixed with a pint of 5 per cent carbolic or chloride of lime, or 3 per cent formalin, and allowed to stand for some time. Bed-linen should be changed daily and disinfected in the same way.

*General Treatment of Acute Cases.*—The body should be **Sponged** at intervals of two to four hours with cold water, vinegar, or dilute alcohol. To relieve tenesmus, an **Ointment** containing tannic acid (4 per cent) and cocaine (5 per cent) should be applied to the anal region. **Hot Fomentations** or Japanese **Hot Boxes** to the abdomen give great relief. Three pints of milk daily should be given. If curds appear in the stools, the quantity of milk should be reduced, or it

should be diluted with aerated water. The milk is gradually replaced by eggs, raw meats (scraped), and later, farinaceous foods and toast. Diet is most important, and should be carefully studied. Vegetable acid drinks may be used.

Of drugs, **Brandy** and **Aromatic Spirits of Ammonia** are the most valuable.

*Irrigation.*—Normal salt solution, or 4 per cent sodium bicarbonate, should be used, and one to three pints injected at each time. If there is tenesmus, **Tinct Opii.** ½ dr. to 1 dr. may be added to each enema. To control hæmorrhage the liquid **Extract of Ergot,** 1 to 2 drms, or especially **Adrenalin Chloride,** $\frac{1}{5}$ gr., should be added. It is important that the enema should be effectively given. The hips must always be higher than the shoulder. The patient best lies on the right side; it is well to give a preliminary cocaine suppository. A well-oiled rectal tube of large diameter is then passed in for 20 to 40 inches. The irrigating fluid is kept at a level of 3 feet above the bed, and should flow slowly. A double tube giving exit and entry is often advisable. The enemata should be repeated every four hours.

*Acute Bacillary Dysentery.*—**Anti-dysenteric Serum** is the proper treatment. It is important to obtain a serum made from dysentery bacilli of various types, as it appears that one made from a bacillus of an "acid type" is not curative for an "alkaline type" bacillus, and *vice versa.* Of drugs, **Sodium Sulphate** is recommended, 60 grs. every hour in cinnamon water. **Castor Oil** and **Sulphur** are preferred by others. **Ipecacuanha** is valuable in bacillary and mixed cases, but not in amœbic dysentery; 15 to 20 grs. are given every four to eight hours, in mucilage. A quarter of an hour before the dose, a **Mustard Plaster** should be applied to the epigastrium, and 30 minims of **Tinct. Opii** given internally. The patient should be told not to swallow his saliva; the head should be kept low, and a cold compress placed over the eyes. **Oil of Turpentine** (in cases of tympanites), **Opium** (to relieve pain), **Ergot** or **Adrenalin Hydrochloride** (to relieve hæmorrhage) are also of service. **Cinnamon, Monsonia Ovata, Simaruba,** and **Cortex Radicis Granati** are used by various practitioners. For rectal injection *pure* olive oil gives the best results, being sedative, and removing mucus better than any other agent. If *pure,* unadulterated oil cannot be got, milk may be used, or a 4 per cent solution of bicarbonate of soda.

*Acute Amœbic Dysentery.*—**Salines** should be given *per os.* Of enemata the best is a 0·1 to 0·4 per cent solution of **Eucalyptus Gum.** Its solution is acid, and by its use amœbæ and other protozoa are said to be rapidly eliminated from the gut. If this is not obtainable, a 1 per cent solution of **Quinine** should be used twice or thrice daily. In chronic cases Ford recommends:—

| | | | |
|---|---|---|---|
| ℞ Quin. sulph. | 15 | Sodium chloride | ʒ.5 |
| Acid tannic | 30 | Aq. destil. | ad 1500 |

*Acute Mixed Infections.*—Medicinal treatment should follow on the lines laid down for the others. The best solution for rectal injection is :

| | | | |
|---|---|---|---|
| ℞ Eucalypti gummi | 3 | Lact. steril. | ad 1500 |
| Ol. olivæ | 75 | | parts |

*Chronic Cases.—General Treatment.*—Besides general hygienic precautions, medicinal treatment of diarrhœa may be required. In obstinate cases of fermentation and colliquative diarrhœa Ford recommends :—

| | | | |
|---|---|---|---|
| ℞ Ac. carbol. | | Camphor | āā 10 |

Sig.—Two drops on sugar every two hours.

**Sulphur, Simaruba,** and **Monsonia Ovata** may also be used, and a single medicated **Injection** given every day. The injection should be preceded by a copious one of 4 per cent sodium bicarb. or normal **Salt Solution.**

*Chronic Bacillary Dysentery.*—The best enema is one of **Ol. Gaultheria,** in a 0.05 to 0.20 per cent solution.

*Chronic Amœbic Dysentery.*—The best enema is **Eucalyptol :**

| | | | |
|---|---|---|---|
| R Eucalyptol | 1 5 | Aq. | ad 1500 |
| Eucalypti gummi | 2·5 | | parts |

Failing this, 1 per cent **Quinine.**

*Chronic Ulcers* should be exposed when possible by the speculum, and, after application of **Cocaine, Curetted** and washed out with 20 per cent **Silver Nitrate** or pure **Carbolic Acid.** They should be washed shortly after with **Salt Solution.**

*Chronic Mixed Infections.*—Enemata of **Eucalyptol** and **Ol. Gaultheria** may be used together, using half strength of each ingredient present in the separate enemata.

The author does not claim that these modes of treatment will give elsewhere the results that he has had with them during four years' experience in the U.S. army. He considers of especial value the **Antitoxin, Ol. Gaultheria, Eucalyptol, Eucalyptus Gum, Olive Oil,** and **Quinine** in greater strength than that generally employed.

*Bacteriology.*—Morgenroth[2] investigated bacteriologically cases of dysentery in China. He found cases of dysentery with liver abscess and no amœbæ in the stools. Altogether he isolated 11 cultures of "dysentery bacilli," and found that 4 were identical with Flexner's bacillus from the Philippines. Others were identical with the Shiga-Kruse bacillus. There probably exists a group of nearly allied bacilli, just as we have typhoid and paratyphoid bacilli ; and "paradysenteric bacilli" will have to be further investigated.

Castellani[3] has investigated the bacteriology of dysentery in Ceylon. He cites the following causes of dysentery according to various observers : (1) Amœbic ; (2) Bacillary ; (3) Spirillar (Le Dantec) ; (4) *B. coli dysentericum* (Celli). He examined 23 cases, and out of 19 succeeded in cultivating the *B. dysenteriæ* (Shiga-Kruse). In two cases large quantities of amœbæ were present in the stools. *B. dysenteriæ* on cultures has a great resemblance to *B. typhosus*, but

the latter is actively motile (in fresh cultures), while *B. dysenteriæ* shows at most only trembling movements. Rabbits inoculated waste, and only live about a week. They may have violent diarrhœa, but the author has not observed blood or pus, nor ulceration, *post-mortem*. Agglutination occurs after the first week of the disease, and is well marked in convalescents. Agglutination is obtained in dilutions of 1–40 after two hours. The reaction is irregular; it may be got one day and not the next. Control experiments with healthy persons only give a reaction with a dilution of 1–10.

Probably, as in typhoid paratyphoid bacilli occur, so here we find **Paradysenteric** bacilli. Bacilli of this nature were isolated by Castellani. They only differed from typical cultures of *B. dysenteriæ* (Shiga-Kruse) in that they formed indol in broth and produced more acid. These bacilli were also pathogenic to rabbits.

The blood of two cases of dysentery during life gave no reaction with dysenteric or paradysenteric bacilli. The fæces contained abundance of amœbæ. Both cases had abscesses of the liver, but in the pus from the abscess examined no amœbæ were present. The *amœba* or *entamœba* present the author considered to be *E. histolitica*, and not *E. coli*, because in the former the nucleus is very indistinct, and does not form cysts with eight nuclei, as is the case with *E. coli*, which Schaudinn considers to be harmless.

Todd[4], experimenting on the production of a **Dysentery Antitoxin**, finds that the horse injected with the toxin of *B. dysenteriæ* produced in alkaline broth, yields a serum of high antitoxic power, $\frac{1}{1000}$ cc. of the serum being sufficient to protect a small rabbit against twenty minimal lethal doses of the toxin. Incidentally also, he showed that the toxin of the bacillus of asylum dysentery was neutralized by the antitoxin prepared from *B. dysenteriæ* (Shiga-Kruse). (*See also* under Intestinal Disorders.)

References.—[1]*Jour. Trop. Med.* July 15, 1904; [2]*A. f. Schiffs v. Trop. Hyg.* Jan. 1904; [3]*Jour. Hyg.* p. 495, 1904; [4]*Ibid*, p. 480.

**DYSPEPSIA.** (*See also* Stomach, and Gastric Disorders.)

*Prof. Boardman Reed, M.D., Philadelphia.*
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A very condensed and accurate account of the chief forms of indigestion resulting from the more frequent derangements of the gastric secretion is given by Campanella[1]. The symptoms are divided by him into three classes, *viz.:* (1) Chemical, including hyperchlorhydria and hypochlorhydria, achlorhydria, and organic hyperacidity: (2) Neuro-motor, such as vomiting, pyrosis, cramps, tormina, eructations, atony, and insufficiency; (3) Sensory, including gastralgia, hyperæsthesia, anæsthesia, nausea, and anomalies of the appetite. In hyperchlorhydria starchy foods are slowly digested, whilst albuminoids are rapidly consumed; hence albuminoid diet eases these patients, whilst, on the other hand, it aggravates pyrosis and the

gastralgia of fermentation. Gastralgia is said to be usually aggravated by taking food (though this is not always the case), whereas in hyperchlorhydria food generally gives temporary relief. Myalgia has to be differentiated from true gastralgia. Asthenic dyspepsia is essentially characterized by a sense of fullness and tension, with pains in the epigastrium and general torpor. Gastric distension tends to work upwards against the thorax, whilst in gastric dilatation the tendency is downwards. The specific characters of hyperchlorhydria are abundance of gastric juice, little mucus, few alimentary residues, no fermentation, appetite unimpaired; but pain and epigastric fulness. In gastro-succorrhœa the gastric juice is increased in amount, there are frequent fermentations, polydipsia, hyperorexia, intense pain reaching its maximum intensity (in the shape of colic) at the end of digestion, dilatation, meteorism, and hyperæsthesia. In hypochlorhydria or achlorhydria fermentations are excessive, the mouth is slimy, there is a bitter taste and foul breath, vomiting may be severe, diarrhœa or constipation may exist, and the food is slightly digested or not at all. In organic hyperacidity the symptoms are very much like those of hyperchlorhydria, but the burning sensation and the pyrosis are sometimes more marked. Pain is spasmodic and often accompanied by vomiting. In all the forms of hyperacidity, whether hydrochloric or organic, occasional analyses of the gastric contents are very important as a guide to the treatment.

Pearse[2], evidently viewing such affections from the clinical side, that is, symptomatically only, without studying them chemically, divides most cases of indigestion into two great classes—neuroses or nervous dyspepsia, to which he assigns much the larger part; and gastric ulcer. He considers that these two classes merge insensibly into each other, but quite ignores the cases of excessive hydrochloric acid secretion not accompanied by ulcer—hyperchlorhydria. These cases in some parts of the world exceed in number not only those of ulcer, but of any other single gastric affection. During a large dispensary practice in India, Pearse was much impressed by the good results which generally followed when he let the natives suffering from ulceration of the bowel gratify their intense craving for **Acid Fruit**, lime-juice, tamarind, etc. He has had much similar experience in England with Europeans, finding it often best to indulge any marked longing of the patient, even when these were for articles of diet usually considered very indigestible. In the way of drug treatment, he insists upon keeping the bowels well open with **Rhubarb and Soda**, the pill of **Aloes and Iron**, etc., and often prescribes **Hydrochloric Acid**, without apparently having made previously any analysis of the gastric contents.

Diagnosis.—Before we can apply the proper treatment for dyspepsia or other gastric derangement, we must ascertain what the underlying disease is—that is, make a diagnosis. It is not helpful, or even safe,

to prescribe the same for gastric ulcer as for nervous dyspepsia; for excessive secretion (hyperchlorhydria) as for deficient secretion (hypochlorhydria); yet the symptoms of these diverse diseases may sometimes be very similar. To make a certain diagnosis we must usually analyse the gastric contents. Analyses of the stomach contents are at least as necessary as examinations of the pelvic organs, and scarcely less so than analyses of the urine. Herbert French[3] puts in a strong plea for a systematic investigation of the gastric contents in the "widespread lesser ailments" of the stomach, stating that "without examination of the secretion of the stomach to determine first whether it be healthy or not, and secondly, if found unhealthy, to determine in what respect the departure from health has taken place, the treatment of dyspepsia must be haphazard and uncertain." He advises the production of **Emesis** by administering 30 grs. of zinc sulphate, in order to obtain a sample of the gastric contents of patients who decline to have the tube used, and do not vomit. It is doubtful, however, if a sample obtained in this way would correctly show the chemical activity of the gastric glands, since a new disturbing element would thus be introduced in addition to the existing disease. A test of chyme obtained by producing emesis, or of a sample vomited because of some acute exacerbation, will yield quantitative results which may vary widely from those afforded by testing a sample extracted quickly with the help of the tube when the stomach is in its usual condition.

Methods of determining approximately the state of the chemical functions of the stomach when the use of the tube is impracticable, are described by Benedict[4], Boardman Reed[5], and others. The simplest of these, which may be called the Benedict effervescence test modified by Reed, is the administration of **Sodium Bicarbonate** (about a teaspoonful in water) at the height of the digestive period, and then directly afterward, auscultating over the stomach to note if much bubbling from the disengagement of carbonic dioxide has resulted, and also percussing to see if there be increased tympany. Normally there should result (an hour after the Ewald test breakfast) a moderate amount of effervescence, and a small amount of tympany in the region overlying the stomach, whether that be either large or small, in its proper place, or displaced downward. When there is an excessive secretion of HCl (hyperchlorhydria) the increase of bubbling and of tympany from the disengaged $CO_2$ is marked in the same region. The chief drawback to this simple test is that there may often be a large excess of organic acids from fermentation, when a like increase of tympany follows the ingestion of the soda solution; and the treatment of excessive organic acidity must be very different from that demanded for an excess of hydrochloric acid. However, the expert is usually able to decide by the amount of flatulency, the condition of the tongue, appetite, etc., whether the excessive acid in the stomach is organic or not. The other means consists in determining the total

**Acidity of the Urine** before breakfast, and again several hours after the principal meal has been eaten; and also in estimating the amount of the chlorides in the urine. Normally, the total acidity of the urine is somewhat less during digestion than when the stomach is empty. In hyperchlorhydria such normal decrease is greatly exaggerated, and the urine will then often be found alkaline during digestion. There is also, as a rule, a lessened proportion of chlorides in the urine in hyperchlorhydria. On the other hand, in hypochlorhydria the normal lessening of acidity after meals fails, and the total acidity remains about the same. Other things being equal (as a general rule to which there are exceptions), the greater the amount of the hydrochloric acid being secreted in the stomach, the less will be the total acidity of the urine and the proportion of chlorides found in the latter. Therefore, when the uranalysis shows generally a markedly lower total acidity and lower percentage of chlorides than normal, the suspicion may be entertained that probably the gastric glands are over-secreting, and contrariwise. In some conditions, however, the urinary acidity and percentage of chlorides may be markedly changed by other causes than the action of the gastric glands. When the results obtained by uranalysis in these ways accord with those indicated by the Benedict effervescence test above described, they may usually be depended upon as substantially correct.

It is far more satisfactory, however, to make a chemical **Analysis of the Chyme** in all important cases. It is seldom that a soft tube cannot be introduced and kept down long enough to obtain a sample of the stomach contents, provided the effort be patiently persevered with in a skilful manner. In the publication already cited[5] the writer has described a method by means of which the more irritable throats can generally be trained within a few minutes so as to permit the passage of the stomach tube. It consists briefly in holding the end of the latter in contact with the back wall of the pharynx repeatedly for half a minute or more at a time, after a previous assurance to the patient that no attempt will at that time be made to push it on into the stomach. The local irritability and spasm can often be overcome in this way.

Treatment.—*Acid Dyspepsia.*—Numerous physicians in all the civilized countries are awakening to the fact that excessive secretion of hydrochloric acid is quite as common as a deficiency. The occasional stubbornness of the condition (probably often due to a latent gastric ulcer) is provoking much writing on the subject of its treatment, most of it embodying no new or valuable thought.

Campo[6] considers that the symptoms of hyperchlorhydria are caused by a hyperæsthesia of the nerve endings in the mucosa, and that the latter is cured by the **Alkaline Remedies** prescribed, and the pain thus relieved, while the hydrochloric excess may still persist. One of the reviewers has himself often noticed this singular result;

bicarbonate of soda, especially, seeming to exert a sedative influence upon the irritated mucosa. Acting upon the theory that hyperæsthesia is the chief cause of discomfort in hyperchlorhydria, Campo administers sedative treatment in this condition, and has had the best results from **Menthol** and **Cocaine** in the following proportions: menthol, ½ gram, (7½ grs.); cocaine, hydrochloride, ½ gram (7½ grs.); alcohol, 10 cc. (160 minims). Each drop of the solution contains 1½ mgrams of menthol and a like amount of cocaine. Five to ten drops given at the onset of distress afford great relief, and this relief is of greater duration than that experienced from the use of alkalies. After a few days the dose may be decreased, and finally dropped altogether as the symptoms subside. The latter either disappear entirely, Campo insists, or return only after a lapse of time, as they do after other medication. Nevertheless, medication addressed to the cause—the excessive acid secretion—will continue, doubtless, to prove the most radically curative, especially if supplemented by a reform of the diet and a removal of any other exciting causes.

Broadbent[7] has made a study of 24 cases diagnosed as hyperchlorhydria, out of 2500 out-patients observed in two years. In 3 of the 24 cases chemical tests of the stomach contents were made, in one of these vomited matter being thus utilized, and in the other two samples obtained by passing the tube. In the 21 remaining cases the diagnosis was made from the symptoms, but the most of these, with one exception, were so marked as to be unmistakable, unless some of them might have been cases of atypical gastric ulcer. The exception, described as the severest of the lot, was possibly an instance of Reichmann's disease, or continuous hypersecretion complicated with gastro-spasm, since the patient "often vomited at night large quantities of non-odorous acid fluid very rarely containing any undigested food," and suffered from violent colicky pain, especially at night, insomuch that he "sometimes rolled about in agony." Most of the 24 patients had "intense pain" in the stomach or left epigastrium, coming on sometimes after taking food, which usually gave relief, especially milk. In all there was constipation, and nearly all had either acid eructations or actual vomiting. All but two were either anæmic or sallow. There can be little doubt that these patients suffered from an excessive secretion of HCl in some form, and some of them may have had also ulcer of the stomach or duodenum with the usual spasmodic complications; but there must have been scores of additional cases of lighter or less pronounced hyperchlorhydria in those 2500 patients.

Broadbent found that **Lavage** the last thing at night with water in which a drachm of **Tannic Acid** had been dissolved, afforded relief from the pain and vomiting in the case with severe nocturnal vomiting of acid fluid, after soda had failed. The tannic acid disagreed when administered internally in other cases, but a mixture of tincture of

**Belladonna**, **Magnesia**, and **Bismuth** gave the most prompt relief of anything. Magnesia, even alone, afforded more permanent relief than soda, and, besides, helped the constipation. As for diet, he allowed at first milk, cream, bread and butter, and buttered eggs. Fish and meat were not given till later. Soup and beef-tea were forbidden.

Fischl[8] has made in a number of cases observations showing, as a result of ingesting **Oil** or **Fat**, a marked lessening of gastric secretion, and clinically a lasting cure of hyperacidity. But at the same time the digestive power is lowered. When there is a repugnance to oil, the fat in milk may be utilized, and to prevent the rapid curdling of the milk in large pieces by the excessive HCl, rennet may be administered with it. This coagulates it normally in fine particles. Not all cases of hyperchlorhydria, however, will respond to the oil treatment, else the disease could not exist in Greece and Italy, where everyone takes much olive oil.

Another German writer, K. Walko[9], bears testimony to the restraining influence of both the fats and sugar on gastric secretion, especially that of hydrochloric acid. Walko has studied this subject from its physiological side, and finds that both animal and vegetable fats exert this influence. He has proved that olive oil not only lessens the proportions of all the forms of hydrochloric acid in the stomach, including both the free and combined, but also produces a decided lowering of the gastric motor power; further, that the influence of the fats on the simultaneous digestion of other kinds of food seems to be favourable, and that in hyperacidity, especially, the digestion of the albumins progresses even more rapidly in the presence of an oil or fat. Not only in all the forms of hyperchlorhydria, with or without dilatation of the stomach, but also in ulcer of the stomach or duodenum, oil therapy is useful.

**Vibratory Stimulation** has not been in our experience as effective in excessive as in deficient gastric secretion, in constipation, and in some forms of neurasthenia; but Rochelle[10] claims to have cured with it one case which had not responded to the usual dietetic and drug treatment. He applied the rubber ball attachment over the lower cervical, and throughout the dorsal region, especially over the sixth to the tenth right, and the fourth and fifth left dorsal. The brush was also applied lightly over the stomach, and deeply over the hypogastrium. The first treatment relieved the pain and overcame the co-existing constipation. Nine treatments sufficed to effect a permanent cure.

Turck recently read before the American Association of Life Insurance Surgeons a highly practical paper on "The Significance of Indigestion."[11] He blames the Life Insurance Companies for their inconsistency in requiring examinations of the other vital organs, while virtually ignoring the equally vital digestive organs. To show

the absurdity of this, and of lumping the dozen or more diseases that may derange the digestion under the vague term dyspepsia or indigestion, as is still the custom with many physicians, Turck reports that he lately diagnosed complete gastric atrophy and advanced atrophy of the liver, as well as renal insufficiency, in a patient who had just obtained a large policy of life insurance. The patient had complained merely of indigestion. Another similar case, also recently insured, had cancer of the stomach; while a third patient, who had been rejected as an insurance risk because of stubborn vomiting and much emaciation, was found to have nothing worse than a simple form of indigestion, which was cured in six weeks. Such a demonstration of the carelessness of the Life Insurance Companies in not having the stomach examined in all cases, convicts at the same time as equally negligent *all those practitioners* who make no tests nor physical examination of the viscera in the cases of patients who complain of obstinate dyspepsia.

*Gastric Fermentation.*—A very practical and valuable article on fermentation in the stomach, from the pen of Coyon,[12] discusses this important subject exhaustively in its various phases. He points out that the stomach contents can be either acid or alkaline, and that some of the micro-organisms which produce fermentation thrive in the one, and some in the other; also that large eaters and hasty or irregular eaters are most prone to suffer from the trouble. The treatment he considers under these three heads: (1) Bring about a disappearance of the symptoms; (2) Destroy the microbic agents or prevent the action of these agents; (3) Remove the cause which permits the microbe to develop, that is to say, overcome the stagnation which is the principal cause.

1. A very **Strict Diet** is necessary to a rapid disappearance of the symptoms. One must study the alimentation, regulating the quantity of food ingested and, according to the results, requiring frequent but small meals, urging thorough mastication and swallowing of no aliment not finely divided, so as to facilitate the action of the hydrochloric acid. One should forbid the more fermentable foods, above all the carbohydrates, feculent stuff, pastries, bread (a prolific cause of fermentation), and food not thoroughly cooked. Particularizing further, Coyon does not as a rule favour a milk diet in these cases. As to remedies, he recommends for *pyrosis*, **Chalk, Magnesia, Bismuth Subnitrate,** and **Bicarbonate of Soda** in small doses. To diminish the gas he employs an absorbent powder, though he admits that it is only slightly useful.

2. Destroying or inhibiting the development of the microbes, and removing them mechanically by purgatives, lavage, or emetics, constitute the most effective methods. **Ipecac,** in doses of 1·5 grams (22 grs.) and **Sulphur** (sublimated) are recommended; also **Lavage** of the stomach with antiseptics, such as **Salicylic Acid,** in cases of

retention from organic obstruction of the pylorus, but not to be repeated often as a daily treatment. The antiseptics, he cautions, must be used with moderation, since they may injure the cells before they kill the germs. Substances which prevent the development of the latter without harming the mucosa are best, such being the **Fluoride of Ammonium, Iodide of Sulphur,** and **Erythrol.** Of the first named he dissolves 10 to 25 cgrams (1½ to 4 grs.) in 300 cc. (10 oz.) of water, of which a soup-spoonful is taken a quarter of an hour after eating.

3. Coyon insists, though, that the main thing is to remove the cause, whether an organic stenosis of the pylorus, or hyperchlorhydria with spasm of the pylorus ; or if there be atony in the muscular walls, or faulty innervation of the organ, we must employ the physical means of remedying them—**Massage, Hydrotherapy, Electricity,** etc. Besides, in all such cases, constipation must be carefully guarded against to ensure success.

In a paper entitled "Flatulence, Meteorism, and Tympanites" Aaron[13] recently considered this subject. Diseases of the stomach characterized by deficient secretion of HCl, and whatever produces a sluggish peristalsis anywhere in the alimentary canal, tend to the development of excessive fermentation or putrefaction. Constipation and intestinal obstruction are causes of increased gas formation, as is also peritonitis, appendicitis, etc. In the treatment, attention must first be directed to efforts at removing the primary disease or derangement. When this is gastric catarrh, or any condition with a deficiency of HCl, this fundamental affection needs to be remedied. Normal evacuations of the bowels must be secured when possible, and for this purpose Aaron has found nothing better than chemically pure **Oleum Petrolatum,** which is not acted upon by any of the digestive juices, but acts mechanically as a lubricant and emollient. The amount to be taken will depend upon the requirements of the case. Colon douches are recommended when necessary to clear out the bowel, but no reference is made to **Olive Oil Enemas,** which are often highly curative of constipation. The diet needs to be carefully regulated, and the more flatulent articles avoided ; these include especially beer, champagne, kumyss, starches, sugar, vegetables rich in cellulose, such as cabbage, potatoes, beets, peas, beans, rye bread, fresh bread, cakes, fatty food, and mineral waters containing much $CO_2$. Milk also disagrees with many.

Mayer[14] has studied the action of the natural gastric juice obtained from pigs, recently sold under the name of **Dyspeptine.** Certain Russian and French observers several years ago experimented with gastric juice freshly prepared from animals, and reported that extraordinary curative results were obtained from it in various forms of stomach trouble dependent upon, or associated with, deficient gastric secretion. The preparation which has since been put on the market with a proprietary name as above, has disappointed some of the

clinicians who have tried it, possibly because not well preserved: but Mayer reports rather enthusiastically concerning it, and claims that when kept on ice it retains its qualities indefinitely. In gastric catarrh with diminished gastric juice, in atonic dilatation of the stomach, and in consumptive patients with poor appetite, the results are said to have been particularly good. In from five to seven weeks the symptoms in catarrh disappeared, and did not again recur. Fifteen cc. of the juice are given during and after meals, and the quantity may be reduced as soon as a good effect is observed. There seems to be no reason why any one with sufficient skill should not be able to make a fistula in the stomach of an animal, and obtain fresh gastric juice for therapeutic uses.

*Gastritis and Gastric Atony.*—Rose[15] describes and illustrates anew his method of **Strapping the Abdomen** with adhesive plaster, which one of us has found especially useful in displacements of the kidneys, stomach, and other viscera. He now recommends it strongly as a remedy for gastric atony and dilatation, and adverts incidentally to the fact that the ability to elicit splashing sounds over the stomach, particularly at a time when the organ should be empty, is proof positive of atonic walls, affording thus a very simple means of making the diagnosis. Rose quotes a German writer as having advised this strapping method for severe forms of gastritis, ulcer of the stomach or duodenum, spasmodic or inflammatory conditions in the viscera, and in cholelithiasis, as well as in all forms of atony.

*Pyloric Obstruction.*—Until recently most of the authorities have taught that a too rapid emptying of the stomach was due to hypermotility of the gastric walls—an unusual degree of muscular energy in the organ—and that delayed emptying of the same was generally a consequence of gastric atony, though it was recognized that exceptionally it might result from pyloric obstruction, as from a tumour, inflammatory thickening, or even spasm of the pylorus. Pyloric insufficiency in consequence of a weakened constrictor muscle in the part, was an admitted possibility, but considered rare. Knapp[16] champions the view that incontinence of the pylorus, from muscular weakness or paresis following a prolonged over-stimulation of the part, with often a chronic catarrhal process in the same region, is the usual cause of a rapid emptying of the stomach, just as a spasmodic closure of the pylorus from an excessively acid chyme, is now generally believed to be a very common cause of delayed emptying. Whenever Knapp finds little or no chyme one hour after an Ewald test breakfast, he diagnoses insufficiency of the pylorus, and tries it again next day three-quarters of an hour after a like meal, and, if necessary, on other mornings, half or even a quarter of an hour after the breakfast. He claims almost unvarying success in such conditions from the administration of increasing doses of **Strychnia,** beginning with $\frac{1}{25}$ gr. t.i.d. aided by the use of some **Alkali,** given immediately after meals in

complete achylia, or fifteen minutes to an hour or more after eating, accordingly as there is a small, moderate, or full secretion of hydrochloric acid.

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**EAR (Diseases of).** (*See also* DEAFNESS, LABYRINTHINE SUPPURATION, MASTOIDITIS, MIDDLE EAR, TINNITUS AURIUM.)

*Hunter Tod, M.B., F.R.C.S.*

*Aural Vertigo.*—Richard Lake[1] describes in detail a most interesting case of a woman who was the subject of attacks of unilateral aural vertigo, combined with sickness, vomiting, and ever-increasing deafness and tinnitus, the whole duration of the disease being five years. No cause could be found for the deafness. As the attacks of vertigo increased, and there was no improvement after administration of strychnine, belladonna, and mercury, a final attempt to obtain relief by operation was resorted to. After performing the complete mastoid operation, the semicircular canals were removed by the burr. The wound was swabbed out with Lister's strong solution. After symptoms of cerebral irritation had passed off, the patient got rapidly well, and by the end of four weeks could walk without fear of falling. The patient up to fourteen weeks after the operation had no return of vertigo, but the tinnitus persisted. Lake suggests this operation in those cases where deafness is extreme and the vertigo incurable. At any rate, the result shows the possibility of such an operation being performed without serious danger to life.

Bradley[2] mentions a similar case in a youth, which he cured by the administration of **Quinine**, by a modification of Charcot's method. The dose is gradually increased until the patient begins to complain of an increase in the tinnitus, and this is the dose which will control the paroxysms of vertigo. It is desirable to keep below the point where an increase of tinnitus is caused. Thus, if 10 grs. cause tinnitus and 9 grs. do not, then 9 grs. may be taken as the maximum dose. Quinine gives its constitutional effect rapidly, and is equally rapidly eliminated, so the dose must be given frequently. After two weeks the dose can gradually be reduced; if the vertigo returns it must be again increased. Bradley, in his case, started with 21 grs. in the twenty-four hours, and increased it to 24 grs.

Babinski[3] claims to have obtained good results as regards diminishing aural vertigo by performing **Lumbar Puncture**. In 32 cases of aural vertigo, accompanied by violent tinnitus and nausea, the result was good in 21 cases, but in 11 no benefit was obtained. In 106 cases

where Babinski has performed lumbar puncture, there was usually headache and nausea for eight days after the operation, but these symptoms passed off. Absence of reaction after operation generally means that the therapeutic action will be *nil*. If the symptoms recur, it means renewal of pressure by the cerebrospinal fluid, and a further tapping is required. The patients sit during the operation, and lie down afterwards ; 4 to 5 cc. are withdrawn at a sitting, but 15 to 20 cc. have been withdrawn without danger. In most cases a single puncture was found to be sufficient. Babinski's conclusions are that aural vertigo is diminished or cured, but the prognosis is more favourable in pure labyrinthine cases than in those apparently suffering from chronic median catarrh.

*Intracranial Complications of Otitic Origin.*—Sir William Macewen[4], in his address on Surgery at the British Medical Association, 1904, again draws attention to and confirms Körner's[5] observations on the localization of brain abscess arising from primary pyogenic cranial lesions. Formerly abscess of the brain was regarded solely as of a pyæmic nature, occurring by metastasis, and its localization was regarded as impossible. Subsequent experience has shown that in the great majority of instances in which abscess of the brain has formed from primary foci on the exterior of the skull, the brain abscess is situated in direct contiguity with the infected structure. If the cerebral abscess remains unrelieved and continues to grow, it may by extension implicate other regions of the brain distant from the primary external focus ; even then the contiguity of diseased structure is generally traceable. This knowledge is of the greatest value to those who practice aural surgery. One now knows that abscesses will form within a limited area of the middle ear, the particular direction of the extension being determined by the anatomical condition of the parts. So that in dealing with such intracranial complications the **Mastoid Operation** should first be performed, and careful search made for any fistula or sign of disease in the bone.

*Lumbar Puncture in Endocranial Complications.*—Chavasse and Mahu[6] conclude that :—

1. Lumbar puncture is a valuable method of diagnosis in cases of intracranial complications of ear suppuration, provided that the cerebrospinal fluid be examined as to its colour, its bacteriology, and its cytology. If performed with the patient lying down, and no aspiration used, it is almost free from danger.

2. Both positive and negative results must be taken into consideration, as also the clinical conditions and the stage of the disease at the time the puncture is made. The influence of certain general diseases on the constitution of the fluid must not be forgotten.

3. In the great majority of cases, if the fluid is turbid (or even if it is clear), and contains either bacteria or polynuclear leucocytes, or both, it indicates the presence of a bacterial meningitis. If the fluid

is clear, and contains lymphocytes in quantity, it indicates usually tuberculous meningitis; the diagnosis is, of course, certain when Koch's bacillus is found. But lymphocytosis is also found in other chronic meningeal affections, and during recovery from acute meningitis, especially cerebrospinal meningitis.

4. In extra-dural and sub-dural suppuration the fluid remains normal so long as the arachnoid membrane is not irritated.

5. In circumscribed meningitis the results of lumbar puncture are not yet of much value.

6. In brain abscess, in thrombo-phlebitis of the lateral sinus, and in serous (non-bacterial) meningitis, the fluid is clear and normal, but often increased in quantity and at a higher tension, specially in the latter two conditions.

7. In "labyrinthism" and "meningism" the fluid is normal.

8. After traumatic lesions of the labyrinth or base of the skull, causing ear symptoms, red blood corpuscles are generally found in the cerebrospinal fluid.

9. Operation should never be put off because of the conditions found in the fluid.

10. The therapeutic value of lumbar puncture is not great; nevertheless, considering the results obtained in general medicine, and in some cases of otitic meningitis, puncture may rightly be performed along with the surgical intervention.

11. Lumbar puncture has demonstrated the curability of certain cases of meningitis.

12. Examination of the cerebrospinal fluid, specially as regards its contents in leucocytes, constitutes a great step forwards in the diagnosis of intracranial complications of otitis.

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**ECLAMPSIA** (**Puerperal**). *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

An interesting statistical study of this subject has been made by Buttner[1], involving the consideration of 143,304 confinements. Among these were 321 cases of eclampsia, or 1 in 446; primiparæ formed 73·7 per cent of the eclampsia cases, and multiparæ 26·3 per cent. Twin pregnancies occurred in 6 per cent. The cases under consideration dated from 1891, and showed a mortality of 21·12 per cent.

Etiology.—Barton Cooke Hirst[2], in a study of over 100 cases of eclampsia, says that modern theories have not been proved. There is nothing advanced which has the same basis of common sense and is in such accord with clinical observation, as the long-accepted view that the products of fœtal metabolism discharged into the maternal blood, and eventually eliminated by the maternal kidneys,

are the chief predisposing cause of eclampsia, and that insufficient elimination by the maternal kidneys is the chief exciting cause. There is nothing, therefore, to shake our belief that *nephritis in pregnancy* is one of the gravest complications, demanding constant care, and never to be regarded with indifference.

It may be remembered that in 1901 Hey Groves[3] advanced the theory that the essential lesion consisted in the formation of minute capillary thrombi, with hæmorrhagic infarcts and necrosis of the surrounding cells. These thrombi occurred most frequently in the liver, the kidneys, and the brain, and by their presence gave rise to the fits and the coma. Hey Groves attributed the more ready formation of thrombi in eclampsia to an increased coagulability of the blood, this alleged increase in its turn being due to the presence of toxins which originate in the placenta, the fœtus, and the alimentary canal. Carstairs Douglas[4] has recently carried out an extended series of observations, and concludes, as the result, that there is little difference in the coagulation time.

Premonitory Symptoms.—Of late years there has been a growing tendency to regard the quantitative estimation of *urea* excreted by the kidneys as the most reliable indication of the disposition to eclampsia. Among recent supporters of this view is Krusen[5], who says that when the amount of urea excreted falls below 1·5 per cent, there should be stimulation of all the excretory processes.

Hirst (*op. cit.*) thinks that the urea excretion is valueless compared with the significance of *albumin* in considerable and increasing quantities in the filtered urine. In all his cases there were only two in which albumin was absent, and in one of these an autopsy showed a chronic nephritis, a sequel to scarlet fever; and he quotes a report of 322 cases of eclampsia from the Charité in Berlin, where albumin was absent in only six. He holds that a steady and rapid increase of albumin is the most certain and constant premonitory sign of eclampsia that we possess at present.

Wilson[6], in a study of the significance of uranalysis in pregnancy, with especial reference to eclampsia, refers to "the doubtful claim that a decided fall in the amount of excreted urea can ever be looked upon as a dependable indication of oncoming eclampsia," and considers that the highest importance must always be attached to the presence of renal epithelium in quantity; also to tube casts, especially when in large numbers, and when of the granular, blood, or epithelial varieties. Normal urine always contains a few hyaline casts, which may be found, if looked for with care. No normal urine contains many of the latter, however, and normal kidneys are never responsible for casts of the granular or epithelial types. The microscopic sediment in the majority of instances furnishes our most accurate guide as to the condition of the renal apparatus, and its critical study should never be omitted from the urinary examination.

Treatment.—There is perhaps no condition the treatment of which is the subject of such a bewildering maze of divergent and even conflicting opinions as eclampsia. It is agreed that the purpose of treatment is three-fold: (1) To control the convulsions; (2) To terminate labour; (3) To eliminate the toxin. The chief divergence is as to the relative importance of these indications, whilst there are further differences as to the best way of achieving each.

Krusen[7] thinks that since "the presence of the fœtus in utero is the direct cause of those conditions which produce eclampsia," the first thing is to **Empty the Uterus.** He says, "While the obstetrician should not cease to combat the convulsions, the sooner he produces or hastens labour, the better are the chances for both mother and child." The extreme teaching on these lines is that **Cæsarean Section** is the proper treatment (Halbertsina); Dührssen advocates vaginal Cæsarean section. Saft[8] has recently reported a case where this was done with success; he considers that this operation is far less dangerous than attempting to deliver either by forceps or by version when the os is not fully dilated. M'Dowell[9] relates a case in which **Bossi's Dilator** was successfully employed by Byers; purgatives, diaphoresis, morphia, chloroform, venesection (30 oz.), and saline transfusion (nearly 2 pints) had all been tried, with only slight results; but there were no convulsions after delivery. Lithgow[10] had two cases of eclampsia before delivery, which led him to the conclusion that the first thing necessary was to empty the uterus, since in both cases convulsions ceased after delivery. In a later case[11], however, the patient had over forty fits after delivery.

Many, on the contrary, maintain that the emptying of the uterus is not the most important thing. Hirst (*op. cit.*) says that after an extended and repeated trial of both plans, he is better satisfied with the treatment directed solely to the eclampsia, without regard to the uterine contents until such a degree of dilatation of the os is secured spontaneously that delivery can easily be secured without violence. In antepartum eclampsia evacuation of the uterus is only indicated if, after the eclampsia is controlled, the patient's urine is persistently albuminous and filled with casts, or if other symptoms of gestational toxæmia continue to a degree that excites anxiety. In such a case it is better, if possible, to induce slowly by bougies or the Voorhees bags, rather than to resort to a forced delivery. Meanwhile the eliminative treatment by **Diuresis, Catharsis,** and **Diaphoresis,** should be actively employed. No one holding these views can approve of Cæsarean section for eclampsia, and there is no treatment of the disease with such a high mortality except the pilocarpine treatment. One has a mortality of over 40, the other of over 60 per cent. As to the treatment of the convulsions, it is well understood that we must employ two sets of remedies—one to eliminate the poison, the other to quiet nervous irritability and muscular activity. It is generally

agreed that normal salt injections, sweats, and purgation are the most reliable measures under the first heading. Diuretics during eclampsia are of no use, because the kidneys during the attack are practically non-existent as excretory organs. There is usually anuria, or a scanty quantity of bloody, albuminous urine, in which, by the way, the percentage of urea is often normal for a pregnant woman. Venesection should be classed among eliminative measures; but after resorting to it almost always at first, he now rarely does so. Among the sedatives, **Chloral** and **Opium** dispute the field. Hirst confesses to a prejudice against the latter, because it antagonizes the eliminative treatment, and there is, it would seem, danger of fatal poisoning from the large doses required, in view of the inactivity of the kidneys. For the relief of the arterial tension and spasmodic contraction of the arterioles he has always used **Veratrum Viride.** An experience of twenty years with it confirms the good impression originally conceived.

Irwin[12], who claims that he has never had a death from eclampsia, places chief reliance on **Chloroform** and **Morphia.** He says: "The way to treat these cases, is first to administer chloroform for immediate relief, then give morphine for greater relief, and after you have emptied the gravid uterus, treat the case as the indications may present themselves."

In cases in which the cervix does not dilate readily, Lithgow, in his second paper, advises that in the primary step of *accouchement forcé*, dilatation of the os, a solution of **Cocaine** should be applied on lint to the part. The time occupied is about 30 minutes. The dangers of laceration are avoided, and the results, in the two cases he has tried it, satisfactory.

Mayne[13] reports two cases in which the hypodermic injection of **Morphine** promptly checked the convulsions; and Sturmer[14] reports one successfully treated by **Thyroid Extract.**

A new plan of treatment has been suggested by Helme[15]. In his communication he considered that the convulsions are dependent upon an increased cerebrospinal tension—an intracranial pressure. Alluding to the fact that in order to control the convulsions, when once they had set in, we must at present chiefly depend upon the use of drugs, he suggested, as a safer method, the withdrawal of a quantity of cerebrospinal fluid by means of **Lumbar Puncture,** in order to reduce the cerebrospinal tension; and reported a case in which the treatment had been successfully employed.

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**ECZEMA.** *Norman Walker. M.D.*

Whitfield[1], in two lectures, summarizes the views regarding etiology and treatment. Discussing the parasitic theory, he emphasizes the difficulty of eliminating the surface organisms from cultures, and further points out that microscopically the primary vesicle is free from any emigrated cells, a fact which, to his mind, is strong evidence that the lesions are not caused by ordinary pyogenic cocci, whilst in addition no organisms have been demonstrated in the vesicle by appropriate staining, although, after rupture, secondary infection at once takes place. Bender, Bockhart, and Gerlach, investigating the effects of staphylococci derived from boils and impetigo, found that the staphylococci free from toxins were inert, but when their toxins were rubbed into an unhealthy or previously irritated skin a papular eczema was produced. From these and other observations Whitfield concludes that although germs be on the skin, they are not active until there is an abrasion, and subsequent outpouring of serum which forms a suitable nidus for their growth. He accordingly lays stress on constitutional disturbances, and of these he regards disorders to the alimentary tract as the most important, these acting reflexly and by the production of toxins in the circulation. Vegetable diet is by some considered valuable, but he mentions the fact that he has cured obstinate cases of eczema in vegetarians by a regime of minced beef and hot water.

On the matter of gout, also held as a noteworthy factor by Whitfield as by others, Robinson[2] makes the following very pertinent remarks : "Does the presence of uric acid or its compounds ever initiate an eczema ? Certainly it is true that quite a number of those who are eczematous have, at the time of our seeing them, some evidence of gout, or they relate to us testimony which proves they have the gouty diathesis. The characteristics of all gouty inflammations are threefold : They are sharp, sudden, and fugitive. Eczema may be sudden in its onset, but it is not a fugitive condition. Direct investigation in scraping the secretion from any eczematous area and examining the same for urate of soda or uric acid, has given negative results. There is one other argument against eczema being symptomatic of gout, which is that the administration of colchicum in cases of eczema does not act as a curative, and so far as has been observed, is without any effect." He goes on to turn the tables by suggesting that as eczema and gout are commonly associated, and as sufferers from eczema have an imperfect skin even when at its best, its excretory power will be limited ; effete matter will collect in the blood, more work will be thrown on the kidneys, and gout consequently will develop. The statement is reasonable if it can be proved that the skin is really defective in its excretory capacity.

An interesting example of the effect of nervous strain is quoted by Whitfield ; it is that of a man very much bound up in the scholastic

achievements of his sons, who had regular attacks of eczema on his hands when any of these sons were up for a scholarship examination. The eczema disappeared when the ordeal was safely over.

From Tremolières[3], who holds that one does not cure eczema, but the eczematous—"the eruption, whatever be its direct cause, never appears but in a predisposed subject"—to the other extremists who hold the parasitic theory, there are all stages, each with able advocates. Brocq[4] defines eczema as a prolonged reaction of the skin accompanied by the production of vesicles, while he distinguishes the condition according to the age of the individual, and finds that the seat of eruption and its character vary with the time of life. Warde[5] gives illustrations of the effects of heat and cold as causative agents in the production of eczema: With the former, the vessels are dilated and effusion of lymph is great; with the latter, the vessels are contracted and the tissues are drier, therefore the greater strain thrown on the vessels results frequently in the production of hæmorrhages, as in chilblains. Whitfield sums up his views on causation thus: "Eczema may be caused by external irritants alone, when these are of suitable strength and act for a certain time. Certain skins are from birth of low resisting power, so that their owners are liable to attacks of eczema under circumstances which would not affect normal skins. Other skins have some gross and visible defect, such as ichthyosis, or diminished or excessive secretion, which lays them open to more frequent irritation, and they therefore suffer in the same way. By repeated irritation, or more rarely by a single powerful irritation, the resistance of a normal skin may become so lowered that irritants hitherto inefficient become efficient causes of the eruption." He narrates the case of a medical man who previously had suffered from dermatitis following the use of antiseptics, and had latterly taken up histological research, which involved the use of acids for decalcification. He found that when he sweated profusely in the laboratory—as he was apt to do, for his room often became very hot—he was sure to develop an attack of acute eczema, whereas the sweating of hard exercise in the open air did not bring on any attack. "I thought, therefore, that it was possible that the sweat dissolved the acid which was evaporating in the air, and thus brought it into close contact with his skin; and, working on this hypothesis, I advised him, when the parts had recovered, to use a dusting powder composed of the insoluble alkalies, magnesium and bismuth carbonate, in the hope of fixing any acid and rendering it inert. This was, of course, a very rough method of dealing with the case, but it was so far successful that the attacks got less and less virulent, until I believe they ceased entirely."

Treatment.—Tremolières[6] advises that internal treatment should not be resorted to until local means have failed. According to his experience cod-liver oil is sometimes responsible for the appearance of

new lesions. Brodier[6], who believes in the virtues of internal medication, finds an important place in his armamentarium for such drugs as **Quinine, Colchicum, Digitalis,** and **Ergot; Belladonna** when there is much exudation, and **Valerian** in adults ; **Bromide of Potash** in children ; **Sulphonal** and **Trional** gave him the best results in pruritus, nervousness, and insomnia. Wise insistence is laid on the evil effects of opium and chloral on skin lesions ; while even on the Continent it seems difficult to persuade the general practitioner that arsenic is only useful in a limited number of skin eruptions, and that acute and subacute eczema suffer from the exhibition of the drug.

*Local Treatment.*—Lyle[7], acting on the parasitic theory, claims success in weeping eczemas by the application of 1–2000 **Biniodide of Mercury** used in lint soaks ; the affected parts become dry, any remaining patches are again treated, and the cure is completed by ointments and lotions. Blake[8], with a similar bactericidal end in view, uses **Formalin,** apparently in 1 per cent solution, in dry eczemas ; and where there is exudation, **Glutol,** which is a combination of formaldehyde and gelatin, in formulæ such as : glutol, ℥j ; pulv. talci, ad ℥j. In chronic cases, with Tremolières **Oil of Cade** is first favourite, because, in addition to its intrinsic value, it has no disadvantages of strong odour or staining clothes. He uses it in various forms—pure, mixed with an equal quantity of almond oil, 10 to 50 per cent in vaseline, 30 per cent in glycerin of starch, and 50 per cent in acetone collodion. It must be remembered, however, that its prolonged use may lead to the production of acne. **X-rays** have been used successfully in similar conditions by Stelwagon[9], Zeisler[10], and others, and in obstinate cases it is certainly worth a trial.

A full *resumé* of the progress of treatment is given by Kromayer[11]. There are. he says, three principles underlying the treatment of eczema : (1) Removal of the irritation of the skin, as in a first attack of acute eczema ; (2) Removal of the chronic inflammatory processes by an ordinary agent ; (3) Destruction of the tissue changes. The first is attained by the use of ointments and pastes. The second indication is met by **Tar, Soft Soap** and **Mercurial Ointment,** with the addition of **Sulphur** if it is seborrhœic ; while the third indication is attacked by soft soap, **Liq. Potassæ,** or **Pyrogallol** and its derivatives. **Anthrasol,** a colourless tar product, is extolled by him after a nine months' trial, on account of the ease with which its effect can be watched, and its general reliability. But **Lenigallol,** a chemical compound of acetic and pyrogallic acid, of which he uses 10 per cent in zinc ointment, he regards as " the remedy *par excellence* for eczema where all irritation must be carefully avoided. All eczemas, with the exception of acute irritant eczema, can be treated with lenigallol." It is best used in chronic cases which have been subject to acute exacerbations, but its use must not be continued for too long a time, as finally, in consequence of the liberation of pyrogallic acid, irritation

may be caused. And the cure is often best completed by 10 per cent **Anthrasol** in zinc ointment, as it does not penetrate the horny layer. Subsequent cauterization with liquor potassæ may be required to remove the thickened infiltrated areas. His experience of lenigallol extends over six years, and he has used it in over 1000 cases. His instructive article ends as follows: "If, now, in concluding, I sum up the chief progress which has been made in eczema treatment since Hebra's classical treatment, for acute eczemas and as a form of application of medicaments, the first advance to be mentioned is the ointment treatment. For chronic psoriatic forms of eczema, **Chrysarobin** and **Pyrogallic Acid** represent an essential improvement in therapeutics; the **Tar** treatment has been greatly enriched through the preparation of **Anthrasol**; and finally in **Lenigallol** a remedy has been discovered which must be classed as almost ideal for all forms of eczema which are to be attacked by the mildest superficial cauterization in the most rapid manner possible."

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**ELBOW JOINT.** (*See* DISARTICULATION, and TUBERCULOSIS, SURGICAL.)

**EMPYEMA.** *Wilfred J. Hadley, M.D., F.R.C.S., F.R.C.P.*

Primrose[1], in a paper on the treatment of chronic empyema, records thirty cases, from which the following may be gathered:

1. Empyemata are more common, more fatal, and more likely to become chronic on the left side.

2. Those due to mixed infections, or to any other organism than the pneumococcus, are more liable to become chronic.

3. Such causes as foreign bodies (such as drainage tubes) in pleura, delay before operation, keeping the drainage tube in too long, or inefficient drainage, may all cause an empyema to become chronic.

TREATMENT.—He recommends that free drainage and the removal of rib or ribs should be resorted to at first. But as in many of the chronic cases the pleura has become thick and indurated, subsequently the **Removal of the Costal Pleura** (Schede's operation) may be necessary. He regards this operation (Schede's) as one of great severity, and, while agreeing that it is the only measure likely to be attended with success in some cases, deprecates its use before free drainage has been given a good trial, and discountenances it altogether in those cases which have a tubercular origin. In pyo-pneumothorax he favours repeated **Aspiration** rather than operation with drainage. On this subject he quotes McGuire as saying: "Pus in the body is bad, but in the condition to which I refer I think the operation for its removal is worse." Primrose, however, considers this statement too general,

and urges that an exception must be made in those cases where there is communication with lung or bronchus, and abundant, foul, purulent material is being expectorated. For in such cases it must be remembered that: (1) Drainage through the lung is often incomplete and intermittent; (2) There is often much damage done to the lung (even gangrene resulting); (3) Frequently the pus sets up fœtid bronchitis or bronchorrhœa, to which the patient may succumb. He reminds us that pus, coughed up, may come from a collection outside the pleura altogether; and in support, reports a case of subphrenic abscess which emptied itself through the lung without implicating the general pleural cavity.

James[2] points out the connection between empyema and bronchiectasis. He says that when a pleural effusion has remained too long, the collapsed lung becomes fibrotic; and when the fluid is eventually removed, the fibrotic lung cannot dilate, and therefore the chest wall falls in, the surrounding organs are displaced, and if this is not sufficient to fill the space, the bronchial tubes become dilated. He states that this is more likely to occur when the effusion is purulent, and, moreover, the empyema frequently perforates the lung to communicate with the bronchiectasis. Such cases are best treated by free drainage of both the pleural and pulmonary cavities, and it is always necessary to **Remove Portions of Ribs** so as to allow of the falling-in of the chest wall. For the chest wall must be able to follow the contraction of the lung, by which alone the bronchiectatic cavity can be obliterated.

References.—[1]*Can. Jour. Med. and Surg.* Aug. 1903; [2]*Brit. Med. Jour.* Jan. 2, 1904.

**ENDOCARDITIS (Infective).** *Prof. A. H. Carter, M.D., F.R.C.P.*

Those who wish to bring their knowledge of this subject into line with recent work, might do well to peruse a paper by Dr. Beverley Robinson[1], entitled "A partial study of Ulcerative Endocarditis."

In illustration of the rare occurrence of healing of the cardiac lesions of infective endocarditis, Dr. Fisher[2] records the case of a woman who died fourteen days after a miscarriage, having recovered from infective endocarditis some four years previously. The edge of the posterior cusp of the mitral valve was thickened, and stretching upwards from it over the posterior surface of the left auricle were lines of fibrous tissue intermingled with small calcareous masses. The infective nature of the endocardial attack was confirmed by the extent and distribution of the calcareous masses, as well as by the clinical history, the notes of which had been carefully recorded.

References.—[1]*Amer. Jour. Med. Sci.* April, 1904; [2]*Med. Chron.* Oct. 1903.

**ENDOMETRITIS.** *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

There are few gynæcological subjects so unsatisfactorily cleared up with regard to their pathology as "endometritis." The name is at present given to a variety of conditions, some of which are clearly

not inflammatory at all. Fothergill [1] gives an instructive review of some recent work on the subject. Thus Donald read a paper before the North of England Obstetrical and Gynæcological Society, based on observations on forty cases of "endometritis" in virgins. They were cases of chronic endometritis and metritis, so called, occurring apart from septic infection and other obvious causes; he therefore excluded all conditions of the uterine wall and mucosa which occurred in connection with new growths and with tubercular processes, and in membranous dysmenorrhœa. Cases of sterile married women were excluded, because the lesions they presented might possibly be infective. The forty cases discussed had all been observed for prolonged periods, most of them having been seen in private practice. There were three main groups. In the first and largest group the cervix was small, and there was acute anteflexion or retroflexion; but whether the flexion was backward or forward, was regarded as accidental and unimportant. The body felt small; but on examination under an anæsthetic it was found to be enlarged and elongated. There was often stenosis in some degree; the isthmus was thin and soft. In a second and smaller group there was an ordinary cervix, and a large, heavy corpus uteri, either anteverted to excess, or retroverted. The third and smallest group was marked by hypertrophy of the cervix, and cervical catarrh. As to the symptoms, pain in the lower abdomen was complained of in 36 of the 40 cases. Dysmenorrhœa was present in 33; leucorrhœa in 31; menorrhagia in 16. The main pathological feature of these cases was hypertrophy of a glandular structure, the uterine mucosa; this was associated with hypertrophy of the wall of the uterus.

The treatment invariably employed was **Curetting.** In 26 cases which had been followed up completely, there were 24 which were greatly benefited, 14 of them being really cured, and 2 not being improved. Removal of the uterus was not required in these cases. It was not right to leave them alone, and curetting gave very satisfactory results. The displacements observed were not primary, and often remained after the patient was cured; therefore the use of pessaries in these was condemned as unnecessary and ineffective. Ventro-fixation alone had been found insufficient. In one case this operation had been performed without relief to the symptoms, which yielded to curetting six years later.

Fothergill also refers to some interesting papers by Theilhaber and his assistants[2]. Theilhaber holds that, in a great mass of cases called "metritis," there is no primary inflammation of the endometrium, but a primary defect on the part of the uterine muscle, and a secondary hypertrophy of the endometrium. Uterine contractions play a great part in regulating the circulation in the pelvic organs. They are weak and few in childhood and in old age; stronger during reproductive life, and very powerful during menstruation. It is owing to

muscular action, that bleeding often stops during menstruation for hours together. If the legs are allowed to hang down motionless they become œdematous through venous stasis, and persons who stand a great deal are subject to varicose veins. Those who walk are not thus affected, because muscular action helps in returning the venous blood to the heart. Similarly, uterine contractions empty the uterine veins and those of the other pelvic organs. Pelvic congestion is favoured by inactivity on the part of the uterine muscle, and uterine contraction is needed to regulate and finally to end the period of hæmorrhage. If the uterine muscle is inefficient, the period is prolonged and there is inter-menstrual leucorrhœa. If venous stasis becomes a chronic condition, there is over-nutrition and hypertrophy of the tissues, and thus are produced the conditions which are wrongly named endometritis and metritis.

Another type of uterine muscular inefficiency includes muscular degeneration due to general disease. Chlorotic girls, for instance, often have excessive menstruation, sometimes accompanied by leucorrhœa. The cause may be general anæmia, just as alterations of the heart-muscle occur in the same disease. The condition often lasts long enough for venous stasis to cause hypertrophy of connective tissue and endometrium, with enlargement of the uterus as a consequence. Other examples of bleeding due to degeneration of muscle may be seen in exhausting diseases like phthisis, and at the commencement of acute infectious diseases.

Lorenz[3] has investigated nine uteri extirpated on account of persistent hæmorrhage. The clinical features of these cases were those usually associated with the name "chronic metritis." There was always considerable enlargement of the uterus, with thickening of its walls. The cavity was generally increased in size. The tissues were soft and flabby, with numerous vessels. The mucosa was not always thickened, and the serous covering was normal. Microscopic examination revealed marked increase of connective tissue, with relative loss of muscle. The hypertrophy of connective tissue was not uniformly distributed, but was specially obvious in certain places. The mucosa showed no alterations of importance beyond hypertrophy. Fothergill points out that the failure of many of these cases of hæmorrhage to respond to treatment by **Ergot,** may be explained on the supposition that the uterus did not contain enough muscle for the drug to act on. The use of the curette would be regarded as a stimulant to the development of the whole organ, sufficient to bring about the improvement in muscular tone necessary to stop the bleeding.

Sinclair[4] makes an interesting contribution to the subject of so-called "erosion" of the cervix. He contends that hypertrophy and erosion of one lip of the os uteri uniformly accompanies and is caused by a pathological flexion of the uterus. Such an affection of the posterior lip is invariably associated with retroflexion, and

similar changes in the anterior lip show a morbid anteflexion of the uterus He reports three cases in which erosion and hypertrophy of the posterior lip disappeared after ventro-fixation, and considers that the following practical observations follow from the relation between flexion and congestion :—

1. The treatment of "ulceration of the womb" by applications of caustic substances becomes ridiculous.

2. The abstraction of blood by puncture, or the diminution of congestion by glycerin tampons, is more rational as a preliminary step to restoration of the position of the uterus ; but these measures cannot do any appreciable good unless the tampons act mechanically in raising the uterus to some extent.

3. The extent to which hypertrophy with erosion diminishes, is some measure of the effect of treatment, and thus, when a pessary is worn, occasional inspection of the posterior lip will show whether adequate support is being provided.

4. Old-standing retroflexion, with much tissue change in the cervix and body, is difficult to cure by mechanical means, and where adhesion or great enlargement of the body exists, cure can only be effected by operation. Ventro-fixation is a safe and effective cure in suitable cases of retroflexion, but the author has no experience of it in cases of anteflexion with bladder symptoms.

5 The menorrhagia which occurs in some women with chronic flexion near to the menopause, may reasonably be supposed to be due to a state of the corporeal endometrium corresponding to the hypertrophy of the retroflexed body and of the cervix of the uterus. With the removal of the endometrium the hæmorrhage ceases, and before strangulation of the uterus has again produced a similar growth, the menopause sets in, and menorrhagia cannot again occur.

6. Hypertrophy due to laceration of the cervix and flexion cannot be rationally treated by amputation of the vaginal portion, and such an operation is only justified by the presence of malignant disease.

References.—[1]*Pract.* Mar. 1904 ; [2]*Arch. f. Gyn.* vol. lxvi. part 1 and vol. lxx, part 2 ; [3]*Ibid,* vol. lxx, part 2 ; [4]*Jour. Obs. and Gyn.* Sept. 1903.

**ENURESIS.** *G. F. Still, M.D.*

Etiology.—Children with this condition, according to P. Lewis[1], are usually unhealthy in aspect, either anæmic, bilious-looking, or lymphatic. Their skin is dull and inclined to acne or eczema. They are usually not fond of meat, erratic in their appetite, and live largely on farinaceous and saccharine food ; they are languid children, disinclined for school-work. When taken up at night to pass water they are overcome with heavy sleep and difficult to rouse ; at these times they pass a large quantity of urine, but a little later the bed is nevertheless soaked with liquid. If the urine is measured it will be found that quite two pints are usually passed at night, and sometimes nearly double this amount : it has a low specific gravity, is neutral

or alkaline, shows a deposit of triple phosphates or oxalates, and frequently also a trace of albumin. The large quantity shows that the bladder is emptied, not from the irritating effect of its contents, nor from any weakness, but because of the large amount of urine secreted, which, being of such dilute and unirritating character, does not give sufficient "call" to the central nervous system to awaken the patient, but only enough to start the necessary reflex for emptying the bladder. Elsewhere the same writer[2] has stated that while gout and acidity of the urine may sometimes play a part in the causation of enuresis, they seldom do, for if the urine is so acid as to be irritating, its presence in any amount in the bladder is sufficient to awaken the patient. He also denies that a long prepuce is ever a cause of enuresis, and consequently does not believe that circumcision can cure it. He regards enuresis as "a weak bodily condition caused by an excessive starchy diet, and associated with inability to properly digest that excess."

Another cause which has been suggested as a frequent one is masturbation. Beilby[3] found that out of 75 cases, 71 were in the habit of masturbating. He considers that this increases spinal irritability, and as evidence, states that the reflexes of the lower extremity—cremasteric, patellar, gluteal, and achilles—were found exaggerated in many cases, whereas those of the upper extremity were not increased at all except in two only. The enuresis on this view is due to the acquired irritability of the spinal centres.

In the earliest cases it is sometimes difficult to decide when enuresis ceases to be a normal condition, for, as Rey[4] points out, diurnal enuresis is natural up to about the end of the first year; nocturnal enuresis, on the contrary, lasts under the best conditions of training up to the end of the second year, and in children who have been ill, especially with digestive troubles, the date of the disappearance of normal enuresis may be considerably delayed.

Treatment.—Probably there are few disorders for which more numerous and widely differing methods of treatment have been advised, and certainly none for which more outrageous and wholly unjustifiable methods have sometimes been adopted, as can be seen from some of the procedures mentioned below. Stalberg[5] considers that phimosis may cause enuresis by reflex irritation, and therefore recommends in such cases the breaking-down of preputial adhesions, the stretching of the foreskin, and, if this is insufficient, **Circumcision.** Worms also should be got rid of by suitable treatment; and anæmia, as increasing nervous irritability, should be remedied by the administration of iron. The diet should be simple, and the eating of sweets should be forbidden; the amount of water drunk in the afternoon should be limited; the bowels and bladder should be emptied at bedtime, and the child roused to pass water again a few hours later. Elevation of the foot of the bed, to keep the urine from resting on the

base of the bladder, may be tried. Atropine is preferable to belladonna, as it is of more uniform strength, and there is no drug which is more useful if properly used. **Atropine Sulphate**, gr. j, aq. ℥j, should be ordered, and of this a child five years old may have 2 drops at 4, 7, and 10 p.m. The dose is to be increased a drop each day until 5 drops are taken three times a day if necessary. If this is effective the dose should be reduced, but the drug should be continued for some months after the disappearance of the symptoms. If atropine alone is not sufficient, the addition of **Strychnine** is sometimes successful. Next to these two drugs the most useful remedy is **Rhus Aromatica**; 10 drops of the fluid extract may be given three times a day. **Quinine** and **Antipyrine** are also useful in some cases; 2 grs. of either of these may be given three times a day. **Ergot** is considered by this observer as worse than useless; but others have seen excellent results from it.

If all these drugs have failed, **Mechanical Methods** may be tried, *viz.*, the sound, electricity, or instillation of silver nitrate. Sounding is used every fourth day for a month, a cold steel sound of such size that it enters the bladder without force being the best for the purpose. Electrical treatment consists in applying a slowly-interrupted current, one electrode being placed over the pubes or perinæum, and the other either on the sacrum, or, if this fails, in the urethra; the urethral electrode is shaped like a sound, and insulated to within an inch of its extremity. In females the electrode is placed either in the vagina or in the urethra. Fifty slow interruptions are given, and should not cause pain. This treatment is repeated every fourth day. Stalberg significantly adds, "Perfect asepsis is necessary, or cystitis may be produced." "A month or two" of electricity used in this way may be considered a fair trial; if it fails, the **Instillation** of 3 drops of a 2 to 5 per cent solution of **Silver Nitrate** may be tried every third day for about two months. After this, if the enuresis persists, the persevering medical man is advised that "electricity should be again tried for three or four months longer"! Stalberg considers that adenoids and enlarged tonsils favour enuresis by causing deep sleep, "by the semi-asphyxiating condition" which they produce, or by increasing general nervous irritability; he recommends that they should, whenever present, be removed "on general principles."

**Epidural Injections** have been practised on a large number of patients by Cathelin, and also by Kapsammer[6]. It is specially mentioned as a gratifying feature of this method of treatment that so far no accident has occurred. The technique is "simple." A needle 6 cms. long for adults is inserted between the cornua of the coccyx, and directed upwards into the sacral canal through the membrane which closes its lower end. The fluid injected was, in the earlier experiments, 5 cc. of 0·5 per cent solution of cocaine, but *mirabile dictu*, it was found subsequently that a little normal saline solution was equally effective! This method has been stated to be

effectual in some cases in which the enuresis had lasted from childhood into adult life. A useful comment on this treatment are some cases recorded by Patel[7] in which saline injections were made into the retro-rectal space, apparently entirely *outside* the spinal canal, but with equally good effect, the incontinence being thus arrested in female adults for six months or longer. It is mentioned that the needle is to be guided by a finger in the rectum; otherwise it may perforate the rectal wall.

It is satisfactory to turn to a practical and important observation on treatment by W. D. Spanton[8], who found that irritability of the bladder resulting in very frequent micturition, with some pain, was caused in girls in certain cases by the presence of wool fibres in the bladder. These were found to be similar to the wool of the "combinations" which the children were wearing, and had apparently travelled up the urethra, being assisted in their passage by the peculiar barbed edges which woollen fibres have, and which would make them travel up the urethra in the same way as an ear of grass or barley does. The garment must be changed, and diluents given; Contrexeville water drunk freely, very quickly relieved all symptoms.

P. Lewis (*loc. cit.*) says that in most cases a rigid **Anti-diabetic Diet** stops enuresis in a few days, but that tonic treatment to improve the child's general health should be used at the same time. During the cure starchy food may usually be allowed for breakfast without causing any recurrence of the incontinence, and a return to ordinary diet may be allowed in three or four weeks.

REFERENCES.—[1]*Brit. Jour. Child. Dis.* Feb. 1904; [2]*King's Coll. Hosp. Rep.* vol. vii.; [3]*Amer. Med. Arch. Ped.* July, 1904; [4]*Ann. Méd. et Chir. Inf.* June 1, 1904; [5]*New York Med. Jour.* July 9, 1904; [6]*Wien. klin. Woch.*; *Brit. Med. Jour.* Oct. 31, 1903; [7]*Edin. Med. Jour.* March, 1904; *Ther. Gaz.* July 15, 1904; [8]*Med. Press,* Feb. 29, 1904.

**ERYSIPELAS.** *Norman Walker, M.D.*

Coleman[1], after pointing out the success of intravenous injections of **Colloidal Silver** in various septic diseases, gives details of its application in erysipelas. He injects 5 to 10 cc. of 1 per cent fresh aqueous solution. The remedy is harmless; only in one case was there cardiac depression of a slight character, and in another the temperature rose 2° within six hours after the injection. The basilic vein is selected, all air must be excluded, and careful bandaging must be employed afterwards. Little or no reaction takes place, and the same vein may be used in a day or two for a second application. Five cases, all successful, are mentioned; but, unfortunately from a scientific standpoint, other routine treatment was carried out simultaneously.

Higinbottam[2] recommends painting the surface and 2 inches beyond twice or thrice daily with the following:—

| | | | |
|---|---|---|---|
| R Argent. nitrat. | gr. 80 | Aq. destil. | ʒss |
| Acid. nitric. | ɱ6 | | |

Schillen[3], when dealing with a case of facial erysipelas, considers that painting the interior of each nostril with 50 per cent of water and **Ichthyol** relieves pain, acts as a cooling agent, and opens up the nares. The diseased area and skin a little beyond are treated with 10 per cent **Ichthyol** and **Collodion.** If the disease spreads to the forehead, a compressing strap is applied tightly round the head. Adhesive plaster is covered with ordinary gauze, except on the part applied to the forehead and two inches at the face end, and this prevents adhesion to the hair, secures equable pressure, and frequently prevents the spread of disease to the scalp.

REFERENCES.—[1]*Med. Rec.* Nov. 21, 1903; [2]*Clin. Jour.* June 17, 1903; [3]*Amer. Ther.* June, 1903.

**ERYTHEMA.** *Norman Walker, M.D.*

Galloway[1] gives an instructive summary of the value of erythemata as indicators of disease. When simple in character they are due to vasomotor loss of control, often associated with slow heart-beat and badly-nourished tissues. He narrates the case of a young woman who suffered from permanent congestion of the skin and marked tachycardia, and in whom the slightest injury produced nodules of erythema induratum on the skin, which afterwards necrosed and ulcerated. This woman finally died of an acute gangrene of half the trunk; no visceral lesions were revealed *post-mortem.* Cases associated with intestinal and renal troubles are recorded. Lupus erythematosus he classifies as a toxæmia, and argues that a diffuse multiform erythema and diffuse lupus erythematosus are almost indistinguishable.

Finney[2] gives an account of an instance of erythema marginatum perstans in a man of twenty-one, where the eruption had lasted three years. The face and neck were fair, but the rest of the body of darker hue, with metallic yellowish-brown lustre. Standing out from this on the trunk and limbs were pink-red elevated curves, circles, spots, etc., the face, scalp, and neck being exempt. A prolonged course of iron and cod-liver oil seemed to do some good.

REFERENCES.—[1]*Brit. Med. Jour.* July 10, 1903; [2]*Med. Rev.* Feb. 1904.

**ETHMOIDAL CELL DISEASES.** (*See* NASAL ACCESSORY SINUSES.)

**EXOPHTHALMOS (Pulsating).** *Priestley Leech, M.D., F.R.C.S.*

Murray[1], of New York, records a case of double pulsating exophthalmos following traumatism (a blow over the left parietal bone) in a man aged twenty-nine. The left common carotid was tied above the omo-hyoid muscle; pulsation and bruit immediately ceased when the ligatures were tied; the exophthalmos, the chemosis, and swelling of the lids gradually subsided. Nearly a year later the patient returned with some recurrence of the exophthalmos, and pulsation in the external carotid and in the superior thyroid artery. No pulsation or bruit, and no subjective symptoms. Murray thinks

that in another case he would tie the internal carotid, with resection of the superior ophthalmic vein at the inner angle of the orbit, and, if necessary, resect a portion of the main vein.

REFERENCE.—[1]*Ann. Surg.* Mar. 1904.

**EYE, Diseases of.** (*See* STEREOGRAMS illustrating various diseases of the eye, *Plates VIII* to *XXIII.*)

**EYE (General Therapeutics of).** *A. Hugh Thompson, M.D.*

Darier[1], of Paris, recommends for malignant cases of *syphilitic disease* of the eyes that resist ordinary treatment, **Intravenous Injection** of aqueous solutions of **Cyanide** and **Biniodide of Mercury.** He employs daily injections of from ½ cgram, rising to 3 or 4 cgrams of the salt for a month. No method of administration of mercury, he says, gives such an exact control.

For cases of *sclero-keratitis* occurring in damp and cold periods of the year, not only in rheumatic individuals, but also in otherwise apparently healthy persons of middle age, Asmus[2] finds that large doses of **Sodium Salicylate** are very beneficial.

Gilbert[3] speaks of a form of *acute conjunctivitis* which attacks coal-miners during blasting operations, and is apparently due to a mixture of powder, smoke, and certain gases liberated from the coal. The cause of the affection appears to be merely mechanical, and the best treatment appears to be the 1–1000 solution of **Adrenalin,** a single instillation being sometimes sufficient to effect a cure.

Marshall[4] recommends the use of **Warm Medicated Sprays** for five or ten minutes together in *blepharitis*, where the crusts are difficult to remove, and especially in chronic conjunctivitis, either of the simple form, or connected with old corneal infiltration due to trachoma and pannus.

**Ethyl Chloride,** now widely employed as an anæsthetic in general surgery, is especially recommended for eye work by Stephenson and Chaldecott[5]. For the examination of refractory children with photophobia, and for small operations, such as expression for trachoma, or the opening of abscesses, it is especially valuable. Even excision of the eyeball can be performed under its influence. The special advantages claimed for it are: (1) Its rapidity; (2) The quiet type of anæsthesia produced; (3) The ease and safety with which it may be given to patients of all ages and all types; and (4) Its comparative freedom from distressing after-effects.

What may possibly prove an important addition to our therapeutic resources comes from Oxford. Doyne[6], of that city, has been making trials of **Retinal Extract** in certain cases of deep-seated eye disease. He first employed the fresh retinæ of sheep and oxen, and then had a preparation made called "**Optocene,**" with which he feeds his patients with the equivalent of from 6 to 10 retinæ a day. He claims to have obtained very surprising results in such diseases as retinitis pigmentosa

and optic atrophy, and employs it also in retinal degeneration, from myopia and from choroiditis due to other causes. He claims that its effects are very striking in tobacco amblyopia, where the usual improvement of vision which follows the removal of the toxic agent is very much accelerated by it. This last observation has been confirmed by Sydney Stephenson. It is, however, as yet too early to assess the justice of these various claims. Unfortunately, the expense of the preparation is a hindrance to its trial on any wide scale in hospital practice, and absolutely fresh retinæ are not very easy to obtain.

*Injection of Paraffin after Enucleation.*—In connection with this subject, which was discussed in the last number of the *Annual*, it should be mentioned that the injection of melted paraffin into the tissues is not without danger. Head and Holden record a case in which embolism of the central artery of the retina followed the injection of paraffin into the nose to prevent nasal deformity. The paraffin was mixed with white vaseline, and had a melting-point of 110° F., so that the mischief must have been done at the actual time of operation. To remove the risk from absorption, and at the same time to provide an artificial globe more plastic than glass or metal, Dr. Francis Walter[7] inserts a solid ball of paraffin after enucleation.

Stedman Bull[8], after studying the papers on *Subconjunctival Injections* published within the last seven or eight years, concludes that the efficiency of the various substances injected beneath the ocular conjunctiva, is to be sought in their local irritating properties. The aqueous humour is said to become much richer in albuminoids, due to the irritating action of the injected substances on the blood-vessels. Since the protective substances of the blood are always to be found in combination with the albuminoids, the aqueous is presumably richer in these too. Stedman Bull has not been able to satisfy himself that any benefit resulted from subconjunctival injections in cases of disease of the cornea, uveal track, or retina. In several cases of orbital cellulitis he thought that injections of a sublimate solution (1–1000) did good. The mercuric cyanide solution with acoin, recommended by Darier, he did not find of any use, and it was far from being painless, as that author claims. The subject must still be considered an open one.

References.—[1]*Brit. Med. Jour.* Sept. 26, 1903; [2]*Ibid*, Feb. 27, 1904; [3]*Ther. Gaz.* Aug. 15, 1903; [4]*Ibid*, Feb. 1904; [5]*Ophthalm.* April, 1903; [6]*Brit. Med. Jour.* July 25, and Sept. 26, 1903; [7]*Ophth. Rec.* March, 1903; [8]*New York Med. Jour.* July 14, 1903.

**EYE (Injuries to).** *A. Hugh Thompson, M.D.*

*Localization of Foreign Bodies by X-rays.*—Deane[1] gives instances where, by means of an instrument constructed after the pattern of Mackenzie Davidson's, the exact position of foreign bodies in the globe or orbit was defined. The head is fixed, and a localizer placed

to determine the vertical meridian of the eye and the lower limbus of the cornea. Two radiographs are now taken in two directions at right angles to each other. By the relation of these to the localizer and to cross-wires, the exact position of any foreign body opaque to the rays can be defined. In one case, when this instrument was used, nine shots were localized, but none in the globe, which showed two scleral wounds and a dense hæmorrhage in the vitreous. This dispelled the doubt as to the position of the shot, and possibly avoided a subsequent enucleation. In two other cases, where the giant magnet had failed to remove a piece of steel, it was localized, and on an incision being made was found embedded in the tissues in the exact place indicated. The method has for some time been employed at Moorfields. In an article on "Diseases and Injuries of the Orbit" Treacher Collins[6] describes a case of pulsating exophthalmos, where the X-rays revealed a bullet just below the basilar process of the occipital bone, causing an arterio-venous aneurysm. **Ligature of the Carotid** gave relief to the symptoms.

*Injuries to Eye of the Child during Labour.*—This subject is reviewed by Ernest Thomson and Leslie Buchanan[3]. The injuries that occur are :—

1. Hæmorrhages into various parts of the eyeball. Since this accident may happen to children born by normal or even premature labour, it follows that extreme pressure of the head is not an essential factor. The suggestion is made that these effusions may be the result of increased blood-pressure caused by obstruction to the placental circulation.

2. Corneal lesions. Three varieties may be distinguished : (*a*) A diffuse opacity which is temporary—due to œdema without inflammatory action ; (*b*) A diffuse opacity which is permanent—due to œdema with inflammatory action ; (*c*) An opacity which takes a linear form and is permanent—due to linear rupture of the posterior elastic lamina and subsequent formation of scar tissue.

3. In some instances severe dislocations of the ocular contents, and even extrusion of the eyeball, have occurred.

References.—[1]*Amer. Jour. Med. Sci.* July, 1903 ; [2]*Clin. Jour.* Feb. 3, 1904 ; [3]*Trans. Ophth. Soc.* vol. xxiii.

**EYELIDS (Diseases of).** *A. Hugh Thompson, M.D.*

*Skin Grafting* for restoration of the eyelids, Dodd[1] states, differs materially from that in other parts of the body. The choice of skin graft to be used must be determined by each individual case.

The **Pedicle Graft** is taken from the arm or hand, and until union has taken place, the arm is bound to the head by bandages or straps. The tedium of this constrained position maintained for many days is an obvious disadvantage. Nevertheless, the operation has its place, its advantage being that when placed in a region devoid of normal blood-vessels, the graft still has a source of nourishment. Shrinkage

is at a minimum, and should not be more than one-third to one-quarter of the original size. The pedicle grafts are too heavy for the upper lid, but for the lower lid give the support necessary to prevent its falling away from the eye.

**Wolfe's Graft,** or the complete transference of a piece of skin, has the great fault of uncertainty owing to shrinkage. Dodd stretches a graft and pins it inside-out on a piece of sterilized board, and then with scissors and forceps removes all the tissue possible. Grafts treated in this way have little left but epidermis, and the shrinkage is comparatively small. They are too heavy for the upper lid, but have given satisfactory results on the lower.

**The Shaving** or **Thiersch Graft** is probably the easiest to handle, and seems to grow anywhere if a raw surface is prepared for its reception. The skin should be perfectly dry, and a dry razor used. The author never has any trouble in making one grow if the surface is protected from the secretions of the eye, and the lid is kept immobilized until adhesion takes place. The lids should be stitched together when operating on the lower lid. In the case of the upper lid, for which the graft, owing to its thinness, is specially adapted, sutures should be put through the edge of the lid and fastened to the cheek below with adhesive strips.

*Symblepharon.*—Leslie Paton[2] reports a case where he has successfully grafted **Mucous Membrane** from the **Roof of a Frog's Mouth** in order to form the necessary conjunctival sac for the lower lid. The case was one of complete attachment of the lower lid to the eyeball owing to cellulitis. Three frogs were used, and from the mucous membrane lining their mouths three flaps were prepared, the largest of them being about 2 cms. in length by 1 in breadth. These were kept in warm sterilized saline solution while the eye was being prepared. After the lower lid had been dissected from the eyeball until over a centimetre of raw surface was exposed, the largest piece of mucous membrane was attached to its upper border by four fine silk sutures, the lower margin being left unattached. The other two pieces of mucous membrane were similarly sewn to the fringe of conjunctiva on the ocular surface. A piece of green protective was pushed in, and the eye closed and bandaged for six days. The result was good

*Ptosis.*—One of the most generally practised operations for the relief of this condition has of late years been that of Mules, the insertion and permanent retention in the substance of the upper lid, of a gold wire attaching the lid near its margin to the eyebrow. The wire, however, sometimes breaks, and sometimes, instead of stopping quietly in its place, it is extruded. Bishop Harman[3] proposes to use instead of a wire a fine gold wove chain. He threads the chain to a 4-inch abdominal needle with a triangular cutting edge. The needle is inserted above the external angular process, and passed up and in deeply beneath the tissues of the forehead, and is withdrawn rather

to the inner side of the middle of the lid ; the needle is inserted again at the same point and passed straight downwards through the lid to within a short distance of the lid margin, again inserted here, passed horizontally along the lid margin, and again brought out ; reinserted at the same point and passed upwards parallel to the other vertical limb, and brought out above the eyebrow ; and finally inserted at the same spot, and withdrawn close above the internal angular process. The chain is thus completely buried and evenly stretched in the course A, B, C, D, E, F. (*Fig.* 9) Lastly, by traction on the free ends, the lid can be raised to the desired degree, and the free ends cut off and buried. The chief advantage claimed for this over the wire operation, is that the interstices of the chain allow a strong strand of fibrous scar tissue to be formed, which is more permanent than any artificial substitute.

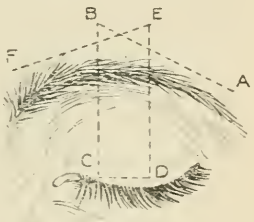


*Fig.* 9.

Based on the same principle—providing an artificial tendon for the frontalis muscle to do the work of which the levator palpebræ is incapable—is an operation devised by Worth[4]. Instead of gold wire or chain, he passes thick buried sutures of kangaroo tendon through the tissues of the brow and lid. As the method of passing these sutures is somewhat complicated, and the operation is still on its trial, those interested are referred to the original paper. No operation for ptosis can be considered to have attained the long-sought-for ideal until it has stood the test of many years' experience.

References.—[1]*Ther. Gaz.* Jan. 15 1904 ; [2]*Lancet*, April 23, 1904 ; [3]*Brit. Med. Jour.* Sept. 26, 1903, and *Ophthalm.* Oct. 1903 ; *Ibid*, July, 1903.

**FACIAL NERVE (Injury to).** *Hunter Tod, M.B., F.R.C.S.*

According to Vialle[1], when this occurs between the second and the eighth day after fracture of the base of the skull, it usually lasts from three to four weeks, may be complete or incomplete, but is always peripheral in origin. The paralysis is probably due to extravasation of blood, as it usually occurs in cases where there is only slight hæmorrhage from the ear. Recovery is due to absorption of the blood.

The theories which consider such paralysis to be due to a contusion or tearing of the nerve, to a parenchymatous neuritis from middle-ear suppuration, and to compression from callus, may be discarded.

Reference.—[1]*Arch. Inter. de Laryng.* No. 4, 1903.

**FACIAL PARALYSIS.** *Purves Stewart, M.A., M.D.*

The Prognosis of facial palsy depends on its cause. Cases due to tumours or to caries of bone are unfavourable, so also are most cases occurring in a degenerative disease, *e.g.*, tabes, disseminated sclerosis, syringomyelia (though in one case of disseminated sclerosis I have seen

a complete facial palsy subsequently recover completely). Syphilitic cases may yield to mercury and iodides if the nerve is not destroyed or hopelessly sclerosed. Cases secondary to otitis media must have the ear condition treated at once, surgically if necessary. But the vast majority of cases are of the so-called "rheumatic" variety, and of these a large proportion recover.

In any given case of "rheumatic" origin, our safest basis of prognosis is founded upon the observation of the electrical reactions. And we should wait a week or ten days from the onset of the palsy before making our electrical prognosis, so as to allow time for degenerative changes, if they are going to occur, to become distinct.

If, in a case of seven to ten days' duration, the electrical excitability of the paralysed muscles is unchanged, both to faradism and to galvanism, or only slightly diminished, with no polar changes, we may then exclude severe degeneration, and expect recovery in from three to six weeks or perhaps less. If there is simple diminution to faradism, but with reversed polar reactions to galvanism, ACC > KCC, then the duration will probably be from six to eight weeks. But if we find typical "reactions of degeneration" (*i.e.*, no reaction to faradism, and galvanism showing ACC > KCC, with a sluggish response) the case is a severe one, will not improve for three months at least, and will probably recover imperfectly.

Another point in connection with prognosis in "rheumatic" cases, is the duration of the pain which so often precedes the motor palsy. The shorter the antecedent pain, the sooner is the palsy likely to pass off. But this rule is not an invariable one, and we prefer to rely upon electro-prognosis.

The TREATMENT of facial palsy varies according to its cause. In syphilitic cases we administer **Mercury** and **Iodide of Potassium**; in ear cases, the otitis media must be promptly treated, by surgical measures if necessary; in wounds of the face dividing the nerve, primary **Suture** of the nerve-trunk must be performed. In the common "rheumatic" variety, a **Fly-blister** should be applied to the front of the mastoid process, as nearly as possible over the stylomastoid foramen. We also administer **Diaphoretics** and a smart **Purge** at the start, and protect the patient against chills. If pain be troublesome, it may be relieved by **Antipyrine** in 10-grain doses, repeated if necessary. Then, until recovery of motor power commences, the paralysed muscles must be stimulated several times a day with the **Continuous Current** for about a quarter of an hour at a time. The patient should be taught to do this in front of a mirror, so as to see for himself that the muscles actually contract. The negative pole is stroked gently along the muscles, the positive pole being placed on some "indifferent" spot, such as the back of the neck. The current should be moderate in strength, just strong enough to produce muscular contraction. The patient must persevere with the treatment daily, with scrupulous regularity, until voluntary power

begins to return. Gentle **Massage** of the paralysed muscles should also be practised every day. In this way, most cases gradually recover more or less completely. The appearance of contracture on the affected side is a sign that recovery will not be quite perfect.

But there remain a certain number of cases which, in spite of massage and electrical treatment, do not recover in the slightest degree ; especially cases secondary to middle-ear disease, operations, injuries, or fractures of the base of the skull. Hitherto, such cases have been regarded as incurable, and the unfortunate patients doomed to life-long disfigurement. Last year, however, Messrs Ballance and myself[1] published a series of cases in which the distal segment of the paralysed facial was united by operation to another motor nerve, either the spinal accessory or the hypoglossal. Of these two procedures we recommend facio-hypoglossal anastomosis as the preferable operation.

Mr. Thorburn in last year's *Medical Annual*[2] discussed our results, and expressed the opinion that inasmuch as it was necessary for the patient to move the scapula or tongue voluntarily in order to get the affected side of the face to move (*i.e.*, there was no "dissociated" movement), he therefore regarded our results as "disappointing." Since that paper was published, however, we have had several cases of facio-accessory and facio-hypoglossal anastomosis, in which not only has "dissociated" voluntary movement been restored, but also emotional movement, so that the patient can smile on both sides of the face : not an artificial, forced grin, but a true emotional smile. Therefore we maintain that facio-hypoglossal anastomosis is an operation well worthy of performance in cases where other means have failed.

In what cases are we justified in recommending nerve anastomosis ? Or in other words, how long are we to wait before regarding a case as incurable without operation ? I believe that a good rule is to persevere faithfully for six months with electrical treatment and with massage. If, at the end of that time, no signs of recovery have appeared, we should then recommend operation. Of course, in cases where from traumatism we know that the nerve has been definitely cut across, *e.g.*, from stabs or wounds, and where primary suture is impossible, we should not wait, but perform facio-hypoglossal anastomosis without delay.

References.—[1]*Brit. Med. Jour.* May 2, 1903 ; [2]*Med. Annual*, 1904, p. 334.

**FÆCES, Clinical Examination of.** (*See* Intestinal Disorders.)

**FIBROMYOMA.** *Arthur E. Giles, M.D., B.Sc., F.R.C.S*

Pathology and Varieties.—Of late years a certain amount of attention has been given to the subject of *cervix fibroids*. Bland-Sutton[1], who was one of the first to recognize their importance, gives brief notes of ten cases. He finds, from the analysis of 500 cases of fibroids upon which he has operated, that about 5 per cent arise in the cervix. In the early stages of growth cervical, like the common forms

of uterine fibroids, are more or less globular, but when they increase in size, tend to become ovoid. Fibroids may grow from any part of the cervix ; commonly they arise from its walls in such a way as to occupy the cervical canal (*Fig.* 10). These are known as intracervical or submucous cervical fibroids. Less frequently they grow from the periphery of the cervix and do not invade the canal, but burrow under the peritoneum on the anterior or the posterior aspect of the uterus (*Figs.* 11 *and* 12). These are known as subserous cervical fibroids

The oval character of the cervical fibroid is best displayed in the submucous variety, for as it grows it pushes the body of the uterus, which is perched on its upper pole, high into the abdomen, and in the case of very large tumours the fundus of the uterus can be detected as high as the navel. The topography and shape of this kind of tumour are best displayed when the parts are sectioned in a sagittal direction.

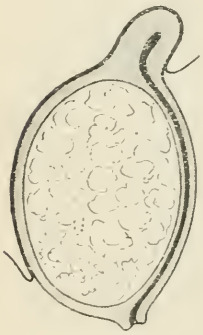

*Fig.* 10.

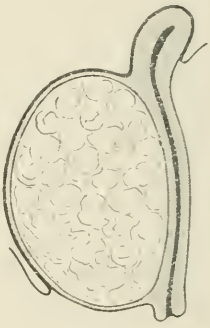

*Fig.* 11.

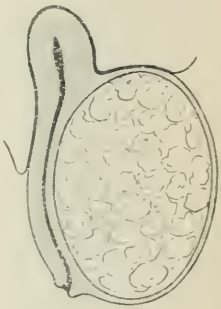

*Fig.* 12.

The ovoid shape of cervix fibroids is determined by the osseous boundaries of the true pelvis. The same shape is also attained by subserous cervical fibroids when they grow from the posterior aspect of the cervix, as shown in *Fig.* 11. This kind of tumour, as it increases in size, pushes the body of the uterus high out of the pelvis on its upper pole, but its relation to the cervical canal is worth some attention. The intracervical fibroid, as shown in *Fig.* 10, uniformly expands the cervix, and in very large specimens its tissues form a thin covering to the tumour ; but a fibroid of the posterior aspect of the cervix elongates it without expanding the canal, and is really situated between the cervix and the peritoneum. This is a topographical distinction of importance in connection with the clinical aspect of these tumours.

Fibroids on the anterior aspect of the neck of the uterus remain more or less globular, and do not distort the shape of the cervix as a rule ; when of large dimensions they push their way upwards between the peritoneum and the anterior abdominal wall. It is a noteworthy

feature of the cervical fibroid, that in more than two-thirds of the cases the tumour is solitary. All varieties of cervix fibroids are furnished with a distinct capsule ; the tumour tissue on section presents the characteristic whorled arrangement of the common form of uterine fibroid, and is microscopically identical with it. Fibroids of the neck of the uterus when they do not cause menorrhagia are very insidious, and rarely give rise to serious symptoms until large enough to fill the pelvis and to exert pressure on the urethra, the vesical segments of the ureters, and the rectum. In some cases, especially in the third variety (*Fig.* 12), there is direct pressure on the bladder. The frequency of micturition, dysuria, and retention of urine, which are such frequent concomitants of the varieties shown in *Figs.* 10 and 11, are due to the bladder being dragged upwards by the uterus as this organ is pushed out of the pelvis by the growing tumour.

The clinical features of the ten cases demonstrate two points : (1) Menorrhagia and metrorrhagia are only noticed with the intracervical variety, and bear no relation to the size of the tumour ; and (2) Hæmorrhages (menorrhagia and metrorrhagia) only occur with intracervical fibroids when the uterus has made attempts to extrude, or has succeeded in extruding, the tumour wholly or partially into the vagina. The corollary is plain. An extruded or partially extruded fibroid is exceedingly liable to become septic, and as surely as this happens, menorrhagia and metrorrhagia are unfailing consequences.

Treatment.—We have little to add to what was said under this heading in the *Annual* for 1903 (pp. 311–318). We may, however, quote here Bland-Sutton's remarks on the treatment of cervix fibroids (*op. cit.*). He observes that these tumours do not lend themselves to any routine kind of operation. When of moderate size and associated with a capacious vagina, the intracervical kind and those which arise on the anterior aspect of the supra-vaginal cervix may be easily, expeditiously, and safely enucleated through this channel. Tumours which attain and exceed the bulk of a fœtal head at term, almost invariably demand treatment by the abdominal route. When the uterus with the tumour in its cervix can be raised out of the pelvis far enough to allow the necessary manipulations, then panhysterectomy can be performed easily and quickly. Occasionally the tumour is wide, and so fixed in the pelvis that it will be necessary to split the uterus longitudinally and to enucleate the fibroid from its bed ; then an ordinary supra-vaginal hysterectomy can be carried out. The enucleation of a large impacted cervix fibroid requires to be conducted carefully, without undue display of force, or so much shock is produced that the patient's life will be placed in the gravest peril. Perhaps the acme of difficulty is that met with when the body of the uterus is occupied by a large fibroid, and another, even larger, grows from the posterior aspect of the cervix and tightly blocks the pelvis. In this particular condition the fibroid can be enucleated

from the cavity of the uterus ; the larger tumour is then shelled out of the pelvis, and the uterus is removed as in an ordinary supra-vaginal hysterectomy. The lower extremity of the capsule forms a pouch, and the unexpanded vaginal portion of the cervix lies in its anterior wall ; before suturing the stump, in order to secure free drainage into the vagina, the cervix is split longitudinally with scissors.

Gottschalk[2] describes an operation by a new method, which he performed in a case in which a large interstitial submucous myoma of the cervix was found to fill the whole pelvis. The anterior cervical lip was represented by a very small ridge, which it was just possible to seize with forceps, but not to draw down. The vagina was therefore incised *in situ*, and the neck of the uterus was divided from the bladder and broad ligament. Next, the posterior wall of the vagina was separated from the rectum, and Douglas's pouch was pushed upwards but not opened. In the posterior portion of the tumour, which was thus exposed, an incision of about 2 inches in length was made to the right and behind the external os in an oblique sagittal direction, through the neck of the uterus. In order to protect Douglas's pouch from being damaged, the posterior edge of the wound was provisionally sutured to the posterior edge of the vaginal wound. The tumour was then shelled out of the surrounding wall as far as possible by the finger, and a wedge-shaped piece cut out and removed. The rest of the tumour was then removed piecemeal, until the last segment, which was about the size of a fœtal head, was removed, when considerable hæmorrhage took place from the cavity of the uterus. Intra-uterine packing with iodoform gauze soon arrested this. The sac in which the tumour had been situated, after the latter had been removed, lay inverted, hanging out of the wound in the neck of the uterus. This was pulled as far as possible out of the wound, and ligatured above a clamp close to the uterus. It was then cut off between the clamp and the ligature, and after Gottschalk had satisfied himself by digital examination that the mucous lining of the cervix was in good apposition and quite smooth, the vaginal vault was again closed, care being taken that the wound in the cervix was well covered. Packing behind the uterus acted as a counter-pressure to the intra-uterine packing. The case did well.

References.—[1]*Lancet*, April 2, 1904 ; [2]*Deut. Med. Woch.* Oct. 2, 1903.

**FISTULA OF NECK.** (*See* Neck).

**FRACTURES.** *Priestley Leech, M.D., F.R.C.S.*

*Fractures of the Leg.*—Wilkinson[1] recommends the following splint, which he considers has some advantages over the plaster-case and the ordinary Croft or Bavarian splint. In place of house-flannel soaked in plaster, he uses many layers of ordinary gauze bandage material, into the meshes of which dry plaster is rubbed after the method described in Scudder's work on "Fractures." An anterior

# STEREOGRAMS
## ILLUSTRATING SOME DISEASES OF THE EYE.

These plates are a small selection of reproductions from the stereograms in *Neisser's Stereoskopischer Medizinischer Atlas; Section Ophthalmology*, edited by Dr. W. Uhthoff, of Breslau, to whom we are indebted for kindly sending us his negatives, with permission to reproduce them. We also wish to express our indebtedness to Prof. Elschnig for taking special prints of his subjects for us to reproduce. The reproductions are in every instance by the half-tone process. The letterpress is a free and abridged translation of the German text, by A. Hugh Thompson, M.D.

*To Use the Stereoscope.**—The instrument should be held nearly close to the eyes, and the glasses parallel with them, looking at the photographs through the centres of the lenses, commencing about twelve inches from the picture. At this distance three indistinct pictures will appear. Directing attention solely to the middle one, the picture should be approached, till it is seen distinctly or "in focus." If the eyes, the lenses, and the photographs are truly parallel, this middle picture will now be seen in bold relief; if not, the attention should be concentrated on some prominent detail of the picture, and by slightly tilting the stereoscope if the picture appears double, the two will be brought into one horizontal plane. The observer's vision will then swiftly correct any slight lateral separation, and make the double picure into a single one, when the effect of relief will immediately appear. After using once or twice the proper effect will be obtained without difficulty.

* For readers who have no suitable stereoscope the Publishers provide a simple but effective instrument. Price 2/-, or a better instrument registered with adjustable periscopic lenses, Price 2/6.

PLATE VIII.—THREE HUMAN EYEBALLS.

1. (Underneath) —of a new-born infant.
2. (To the left)—of an emmetropic adult.
3. (To the right)—of a myope of about 12 D.

The eye of the new-born infant would, one would think, be strongly hypermetropic on account of the shortness of its axis, especially as the corneal radius does not differ very much from that of the adult. A great part of this hypermetropia, however is counteracted by extra curvature of the lens. The myopic eye shows a lengthening of its axis, caused by the stretching of the posterior half of the eyeball. Observe also the enlargement of the nerve sheath in the myopic eye.

# PLATE VIII.

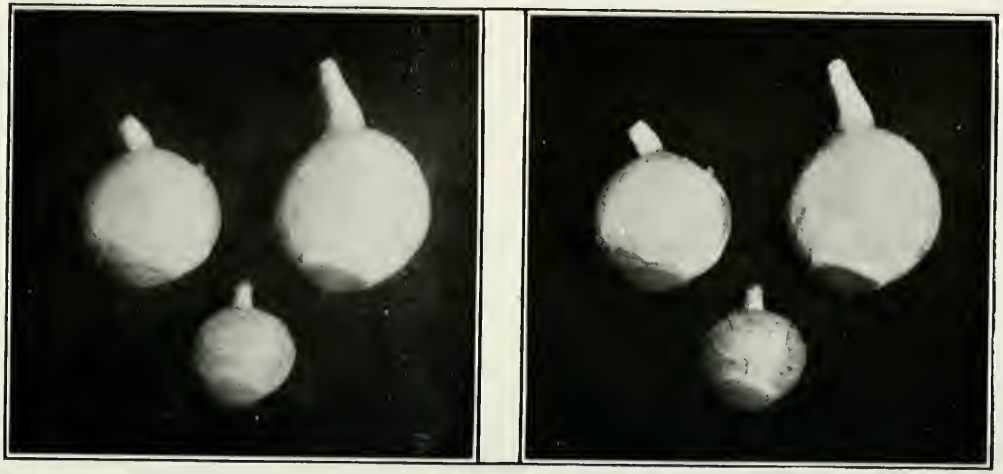

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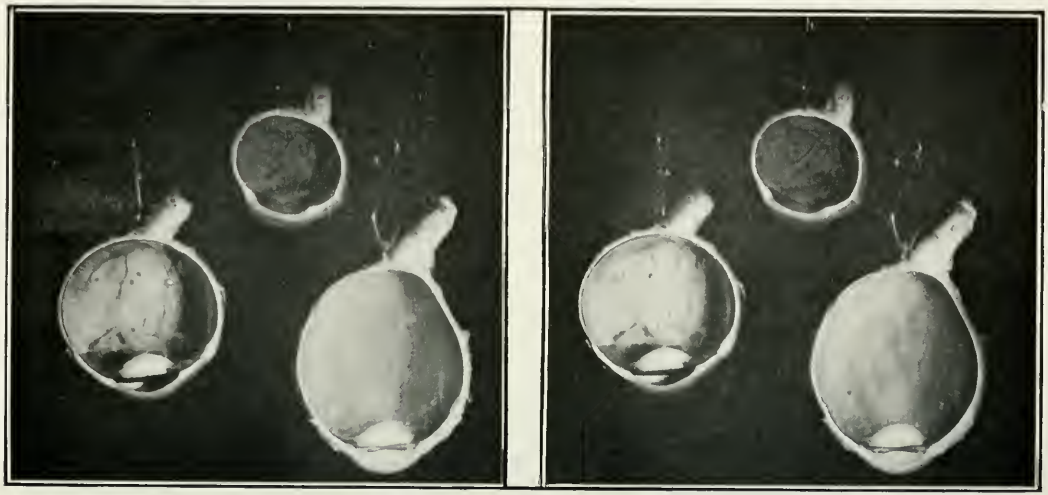
PLATE IX.—THE SAME THREE EYEBALLS (AS PLATE VIII) IN SECTION.

Observe that in the normal eyes the thickness of the sclera increases, whereas in the myopic eyes it decreases, from before backwards. The folding of the retina is also interesting, most marked in the new-born, less in the normal adult, and absent in the myopic eye. All three were fixed in 10 per cent formol solution. The vitreous in the myopic eye shows no detachment, but some vacuoles.

# PLATE IX



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## Plate X.—Emphysema of the Lids.

The patient was a healthy man of 23, and the swelling of both lids had been caused by a vigorous blowing of the nose

The characteristic crackling was plainly felt. Emphysema of the lids is a sign of a defect in the ethmoid bone, and is always occasioned by forcible exhalation with closed nostrils and mouth The air is absorbed spontaneously—in this case it took a fortnight for the normal condition to return.

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PLATE XI.—MUCOCELE OF THE LEFT FRONTAL SINUS,

*Causing enlargement of it, and secondary displacement of the eyeball, binocular vision being retained.*

The patient was a girl, 16 years of age, and the swelling at the upper and inner angle of the orbit had been gradually increasing since an attack of scarlet fever at the age of six. For the last five years the eyeball had become more and more displaced, down and out and slightly forwards. There had been no other symptoms, and no diplopia.

The swelling shown in the plate extended from slightly below the internal canthus to the middle of the upper border of the orbit. It could also be felt by palpating the orbital roof. It was elastic and fluctuating. The skin was normal. The bony wall of the sinus was displaced forwards, and in some places thinned, in others thickened. Whereas the centre of the right pupil was 32 mm. from the median line, that of the left was 45 mm. In spite of this, binocular vision was retained, and movement of the left eyeball was free in all directions; a circumstance due, no doubt, to the excessively slow growth of the tumour.

An incision was made along the upper orbital border, the frontal sinus was evacuated and scraped, and a good recovery followed.

# Plate XI.

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PLATE XII.—ABSCESS OF THE RIGHT UPPER LID.

The patient was a girl, 15 years of age. The swelling had begun with a little "pimple,' and had gone on increasing for a week, with considerable pain.

The right upper lid shows a tense, fluctuating swelling. Skin tense, red, and inflamed. Before an incision could be made the abscess burst spontaneously. A week later the patient was well.

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PLATE XIII.—ANGIO-SARCOMA OF THE UPPER LID.

The child here shown was six months old, and the tumour had been growing gradually larger since birth. It was somewhat elastic, freely movable over the bone, and not diminished by pressure. The skin over it was normal. It was excised under an anæsthetic, and being examined microscopically, was found to consist of small round cells mixed with spindle cells; enlarged capillaries were present in all parts, and among them enlarged veins and a few arteries. The whole was enclosed in a connective tissue capsule. Prognosis doubtful.

# PLATE XIII.

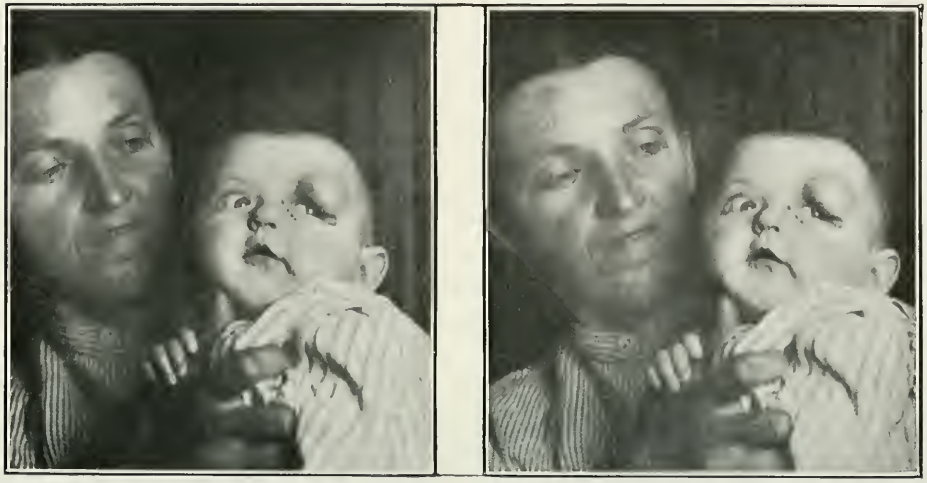

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PLATE XIV.—COMPLETE PARALYSIS OF THE THIRD NERVE ON THE RIGHT SIDE.

This patient (32 years old) showed symptoms of incipient tabes dorsalis. The eye-paralysis had lasted for 18 months when she first came under treatment, and remained without improvement. The plate shows the vicarious action of the right frontalis muscle in raising the upper lid. The patient is fixing with the right eye, and the left shows secondary deviation outwards.

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## Plate XV.—Graves's Disease.

*Exophthalmos of high degree, with complete ulceration of both cornea, and blindness.*

The plate shows a Russian Pole, 28 years of age, who four months previously had been, he said, in quite good health. Then began tremors, palpitation, sleeplessness, swelling of the neck, and exophthalmos, the last symptom increasing so rapidly that he was unable to close his lids even during sleep. Both eyes had become inflamed six weeks ago, and for about three weeks he had been blind. In addition to this he had had a blow on the right eye.

In neither case could the lids be closed over the eye-ball. Both corneæ were opaque. The right was staphylomatous, with a large perforation and prolapse of the iris (due to the blow). The left was flattened, with a recent scar of perforation, with incarcerated iris. Vision was reduced to bare perception of light.

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PLATE XVI.—CONICAL CORNEA.

The patient was a man of 40, with a history of gradually deteriorating sight for 11 years. The cone is well shown in the plate Its apex is about 2 mm. below the centre of the pupil. For treatment of this condition, *cf* article on CORNEA, Diseases of.

# PLATE XVI.

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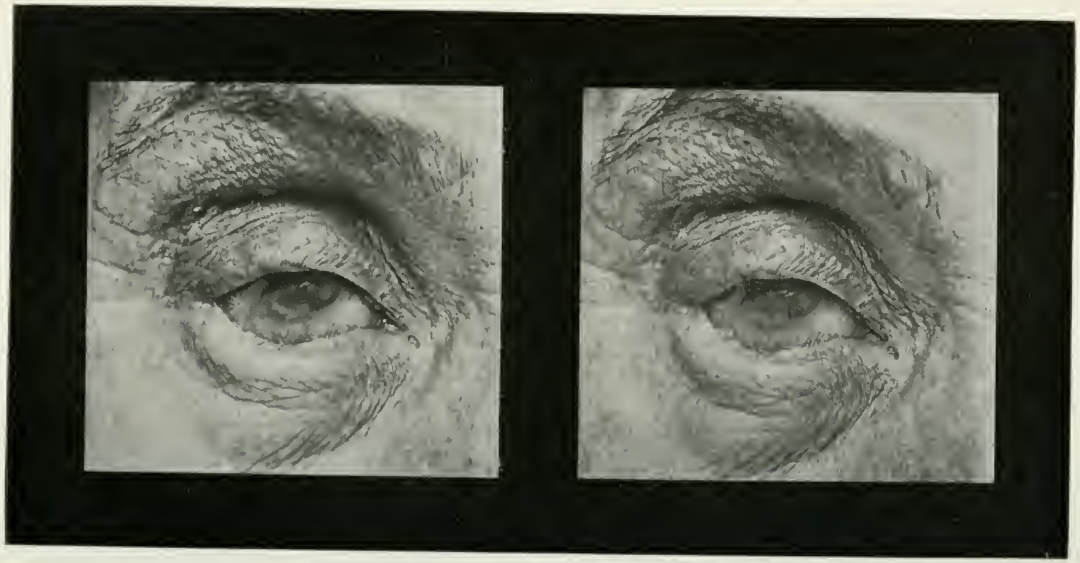
## Plate XVII. -Trachomatous Entropion of the Upper Lid. Spastic Entropion of the Lower Lid (Right Eye).

The patient from whom this plate is taken was a woman of 55, whose eyes had been inflamed since childhood. The orbital part of the upper lid is sunk, the tarsal part prominent, on account of thickening and arching of the tarsus. The margin of the lid is inverted about 90°, and the lashes, many of them distorted, brush against the surface of the eye ball, only a few near the inner canthus retaining their normal position. The upper lid covers considerably more than half the cornea. The lower lid is inverted to a still greater extent, being completely doubled in on itself, except near the inner canthus, where alone the lashes are visible. Elsewhere they are hidden, and the palpebral aperture correspondingly enlarged below, being narrowed above as already mentioned. The cornea is covered with the scars of pannus, the conjunctiva is also scarred, and the upper *cul de sac* shortened.

The trachomatous entropion (upper lid) and the spastic entropion (lower lid) can thus be distinguished. By stretching the skin of the upper lid with the finger, the lid margin, and with it the lashes, can be brought back to their normal position; but immediately on relaxing the pressure of the finger they become once more inverted. By a simular manœuvre the inversion of the lower lid can be overcome; but here on relaxing the presure of the finger, the lid remains in its proper position until a fresh contraction of the orbicularis muscle rolls it in once more.

# PLATE XVII.



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## Plate XVIII. Spring Catarrh.

The plate is taken from a boy of 14, during the second summer when he suffered from the symptoms of spring catarrh, there having been a complete remission during the cold weather. The conjunctiva of the upper lid, and to a less extent of the lower lid, was covered with smooth, flat excrescences of different sizes, resembling a cobble-stoned pavement. Their consistence was tough. The cornea was normal, and in this case the excrescences at the corneo-scleral margin, so often found in spring catarrh, were absent. The conjunctiva of the fornices was slightly swollen and red, but not rough as it almost invariably is in trachoma.

In spring catarrh the excrescences are smooth like cobble-stones, and are generally first seen in the sub-tarsal sulcus, whereas the hypertrophied papillæ of trachoma make their first appearance, as a rule, at the upper border of the tarsus.

# PLATE XVIII.

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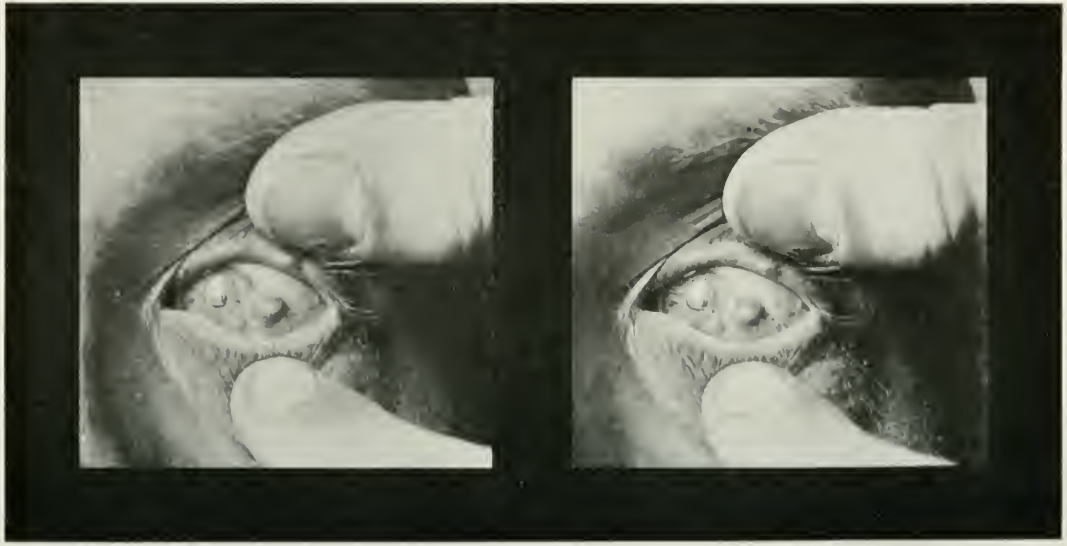
## XIX. Dermoid of the Corneo-Scleral Margin.

The small tumour here depicted was taken from a patient 23 years old, and was congenital. It was 6 mm. in diameter, and projected $2\frac{1}{2}$ mm. The corneo-scleral margin is a common position for dermoids. Their surface is epidermis, and they usually carry hairs. The interior of the small tumour consists of connective tissue, with sweat glands, hair follicles, and hairs. The white appearance in and above the pupil is merely a reflection from the corneal surface.

# Plate XIX.



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## Plate XX.—Xerosis of the Conjunctival Epithelium.

The patient was a girl, 14 years of age, who had many times suffered from inflamed eyes. Evidence of former inflammation of the cornea is seen in the opacity near its lower border. (The bright patch above this is a corneal reflex, probably from the camera). Immediately below this opacity is a vascular infiltration of the cornea (the vessels cannot be seen). Adjacent to its lower and inner margin is a white patch lying over the conjunctiva "like dried foam." This is what is called "Xerosis." The tears pass over it without wetting it. These patches are generally triangular in shape, corresponding with that part of the palpebral fissure which shows conjunctiva. The condition is generally associated with hemeralopia (defective light sense).

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## XXI. Gumma of the Margin of the Upper Lid.

The two photographs were taken fourteen days after the patient had first noticed anything wrong. The swelling had at first been taken for a stye, and incised before the patient came to the hospital. At that time the gumma had ulcerated, and the photographs show considerable loss of substance of the lid. The destruction was not quite so great as it appears in the upper picture, however, the apparent loss of substance being exaggerated by the action of the orbicularis. This is seen on comparing the upper picture with the lower, where the lid is inverted. The patient was a woman of 33, with a history of syphilitic infection from her husband 12 years previously. The infiltration rapidly (in about four weeks) disappeared under specific treatment, leaving a scar.

Gummatous ulceration of the lid margin is very rare. Gummatous infiltration of the tarsus with ulceration of the palpebral conjunctiva is far more common.

PLATE XXI.

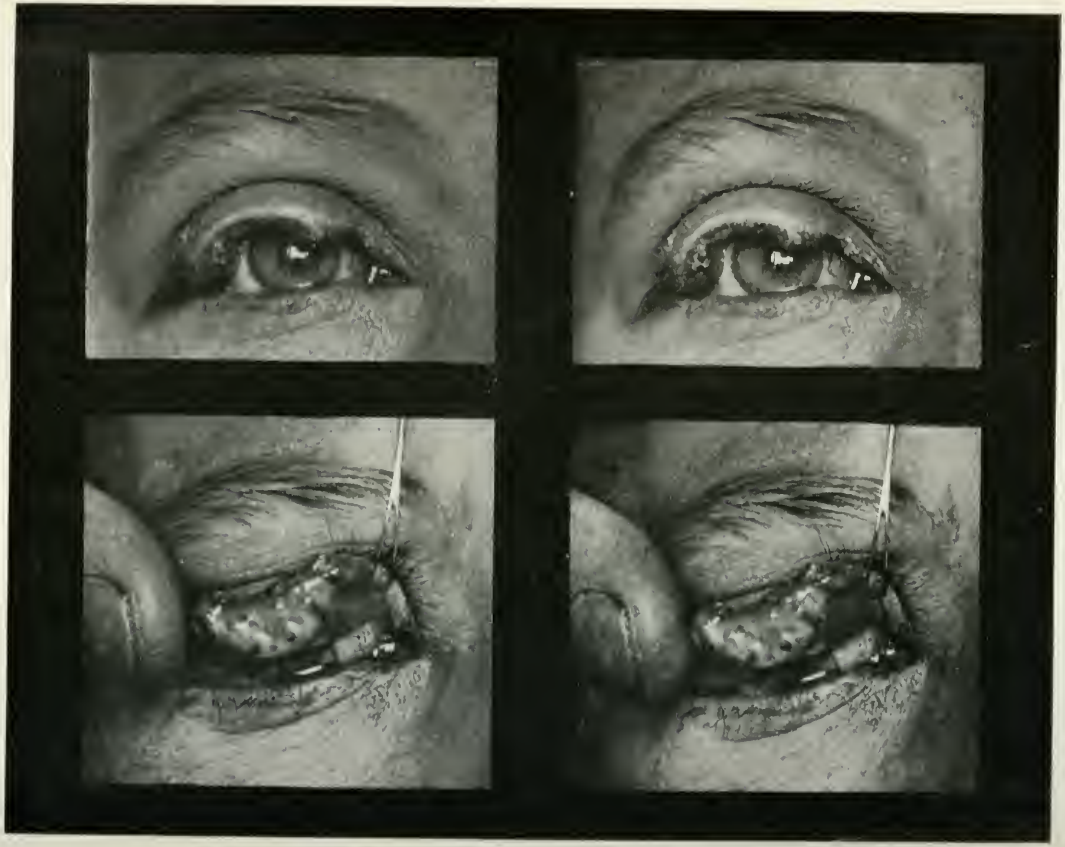

PLATE XXII.—ORBITAL ABSCESS, WITH COMMENCING KERATITIS FROM EXPOSURE.

The condition shown in the plate resulted from a wound. Both lids were enormously swollen and red, the eye-ball proptosed and displaced down and in. No active movement of the lids was possible, and only slight passive movement. Consequently the cornea remained uncovered, and exhibited a form of keratitis due to this condition. The yellowy-white sickle-shaped area near its lower margin is where this process is most advanced. It is not a hypopyon. The pupil was moderately dilated and fixed. The conjunctiva was much ingested. There was complete blindness. The proper treatment is free incision into the orbital connective tissue, which in this case came too late, as the patient died of meningitis.

# PLATE XXII.

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PLATE XXIII.—PULSATING EXOPHTHALMOS.

*Caused by a congenital orbital encephalocele. Defect in the ossification of the right middle fossa of the skull, which is considerably enlarged, especially forwards. Direct connection between this and the orbit.*

The most common cause of pulsating exophthalmos is an arterio-venous aneurism of the carotid. In these cases the pulsation stops on compression of the carotid. In the above unique case (for a full report of which see *Klin. Monats-blätter für Augenheilkunde*, 1901), compression of the carotid had no effect, the patient died of abdominal cancer, and at the *post-mortem* the true cause of the pulsating exophthalmos was revealed in a congenital absence of that part of the great wing of the sphenoid which forms the posterior part of the external wall of the orbit. This allowed the pulsations of the brain to be directly communicated to the orbital contents. At the same time a certain degree of exophthalmos was caused by the displacement forwards towards the orbit of the anterior part of the wall of the temporal fossa. Vision was good.

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and posterior splint is used. The sound leg is laid on a sheet of paper, and the pattern of the posterior splint is made by cutting round it with a pair of scissors (the shape of the posterior splint is shown in *Fig.* 13). Its width is sufficient to embrace about two-thirds of the circumference of the limb; a good width should be allowed at the ankle to accommodate the projection of the heel. The pattern must be turned over so as to reverse the sides, in cutting the splint from the pattern. The pattern of the anterior splint is simply a strip 3 to 4 inches wide, and long enough to reach from the root of the toes to the tubercle of the tibia. Each splint should consist of ten to twelve layers of gauze cut out to the shape of the pattern. The posterior splint is now laid on a considerably wider piece of gauze, and the whole fastened together by a stitch running down the middle. Dry plaster should be rubbed in plentifully between the layers of gauze. The extra width of the outside layer should be split into "tails" on each side of the splint; each tail should be rolled inwards so as to lie neatly by the side of the splint, and the splint itself rolled from either end on two pieces of broomstick. The layers of gauze composing the anterior splint are best stitched together at their ends, and dry plaster is rubbed into its layers. When the splint has to be put on below the knee, flex the knee at right angles, and lay it upon a box or some other firm support. A clove-hitch of calico bandage should be taken round the thigh just above the knee (*Fig.* 14) and the bandage fastened round the head of the bed. Then bandage the leg evenly with a single thickness of flannel, putting small pads of cotton-wool on either side just above the heel, as in grasping the limb at this point during traction a dent is made in the plaster which may cause

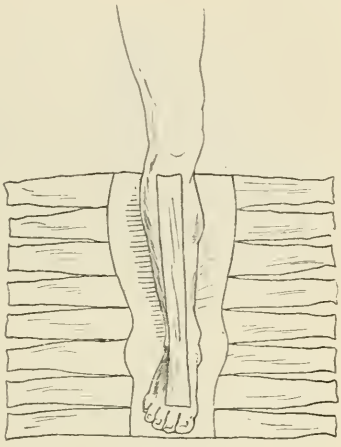

*Fig.* 13.—Posterior splint.

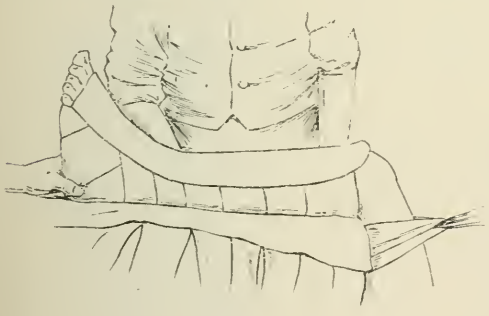

*Fig.* 14.

undue pressure if the skin is not protected in this manner. Both anterior and posterior splints are now placed in warm water; when moistened, the water is squeezed out of them, the splints are unrolled, additional dry plaster is sprinkled freely in the inner surfaces of the splints and well rubbed in, just sufficient water being added to "work" the plaster. The anterior splint is now placed along the front of the leg, the posterior is placed in position under the leg, and the "tails" unrolled. The surgeon grasps the heel and foot through the posterior splint, and makes traction in the axis of the leg, keeping the foot in the correct position; whilst traction is still kept up, the assistant brings the posterior splint round the limb and fixes it in position by tying the "tails" over the anterior splint (*Figs.* 14. 15). The splints should nowhere overlap, and the knots should be tied over the anterior tibial muscles, and not over the anterior edge of the tibia. Traction should be kept up until the plaster sets. The splint can be removed by cutting up one side of the anterior splint along the leg, and up both sides along the foot, when it can be re-applied and bandaged with a calico roller.

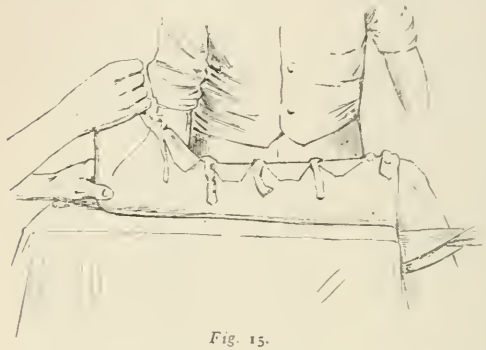

*Fig.* 15.

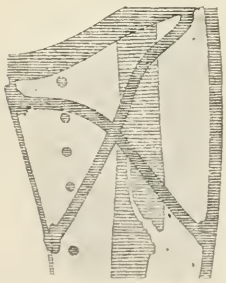

*Fig.* 15.—Fractured femur, and steel splints of the appliance.

*Fig* 17.—Patient with fractured femur, walking on third day.

T. H. Openshaw[2] describes the use of Hoefftche's modified **Hessing's Splint Case** appliance. By means of this apparatus, in nearly every

case of fracture of the leg the patient can be made to walk, with or without the aid of a stick, at the end of the week (*see Figs.* 16 and 17).

*Fracture of Hip.*—Royal Whitman[3] describes more fully his new treatment for fracture of the neck of the femur. Hamilton's cases treated at Belle Vue Hospital give the following statistics: 37 per cent were more than sixty years of age, and 40 per cent were fifty or less. The general belief that the mortality is high is not accurate; in a series of 241 cases there were only 3 deaths—one from pneumonia, twenty-four hours after admission, and two from alcoholism and nephritis. Although the old distinction between intra- and extra-capsule fracture has lost much of its significance, yet the situation of the fracture is of great importance. If at the junction of the neck with the shaft, union should be easier to secure; if at the small part of the neck, apposition and retention will be more difficult, and union of course unlikely, if the primary shortening of the limb is not overcome. If the head of the femur be involved, as in epiphyseal fracture or

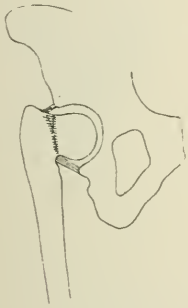

*Fig.* 18.—Incomplete fracture, of a type often found in childhood, illustrating mechanical limitation of abduction.

*Fig.* 19.—A form of impacted fracture.

separation in young subjects, the irregularity at the articulating surfaces will inevitably cause interference with function, even, it may be, to the degree of practical ankylosis. In impaction or incomplete fracture, the neck is forced downwards and usually backwards, or in some instances is driven into the shaft of the femur, a deformity that might be described as traumatic coxa vara. It was taught that no attempt should be made to remedy the distortion for fear of non-union, but this condemns the patient to disability, not because the limb is rotated outward and somewhat shortened, and because he limps, but because of direct interference with the function of the joint. With lowering of the femoral neck there is corresponding limitation of abduction of the limb, a limitation that is usually progressive, and that leads in many instances to persistent flexion and adduction. This distortion is induced primarily by the deformity, it is favoured by the attitude assumed by the patient during the stage

of weakness and repair, and it is confirmed by the accommodative shortening of the adductor muscles. In most of these cases there is persistent discomfort and pain whenever the contracted muscles are suddenly stretched by an unguarded movement. It is probable, too, that the greater strain to which the neck is subjected may lead to further distortion, and induce the nutritive changes of the osteo-arthritic character presented by museum specimens.

At first he treated these cases by linear osteotomy of the femur after consolidation of the fracture, then by wearing of a brace to correct the deformity, but it did not restore the normal angle, and was uncertain, tedious, and burdensome. Then removal of a wedge of bone from the base of the trochanter was done. It was very difficult to bring the surfaces of the wedge into contact, but this was done by abduction and fixation in a plaster spica bandage, and the patient was cured. The next step was more direct. It had been

*Fig.* 20.—Deformity reduced by leverage against the upper border of the acetabulum.

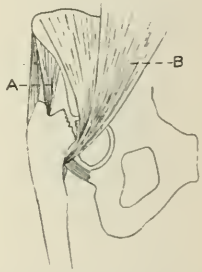


*Fig.* 21.—Complete Fracture of neck of femur, illustrating muscular action in increasing the separation. **A.** Abductor group. **B.** Iliopsoas.

demonstrated that the range of normal abduction was dependent upon the upward projection of the femoral neck, and that the lowering of the neck checked the range in corresponding degree; in impacted fracture there is an immediate limitation of abduction, which is one of the most significant of the diagnostic signs If, then, in an early case one could, under an anæsthetic, slowly abduct the thigh, one might, by means of the fulcrum offered by the rim of the acetabulum and the leverage of the extended limb, actually restore the normal angle (*Fig.* 20). In such a case, the fact that restriction had been overcome, would indicate the removal of the deformity. For, although in a normal subject the capsule might be stretched or ruptured, permitting a downward dislocation of the head, before the neck would give way, this would be very unlikely if the neck were already broken through. If the deformity were overcome, then fixation for a time in this **Attitude of Normal Abduction** should assure union with an approximately normal contour. This was tried with success, and the Röntgen rays showed a normal angle at the femoral neck, and complete

functional recovery, after a fractured neck, was thus secured in two children six and eight years of age (*Fig. 22*).

The next step was to apply the same treatment in adults, for traumatic depression of the neck of the femur produces the same disabilities at every age. Contrary to the accepted teaching, impaction should be disengaged in order to restore as far as possible the normal contour. If the fracture were complete, as is common in older subjects, the shortening having been overcome by traction, the limb should then be abducted to utilize the tension on the capsule to direct the outer towards the inner fragment contained within the acetabulum, and to bring them into more or less accurate apposition. The attitude of complete abduction makes muscular contraction powerless to induce deformity. This muscular contraction, which is described in text-books as of great importance, is more directly that of the abductors, the external rotators, and the iliopsoas muscles. In abduction the former group is entirely relaxed and impotent, while contraction of the iliopsoas would tend to draw the femur directly inwards, and thus to appose rather than separate the fragments. Fixation is, however, more directly assured by the contact of the neck with the rim of the acetabulum, and of the trochanter with the side of the pelvis (*Fig. 22*). In this attitude the comprehensive support of the plaster bandage should provide the rest most favourable to repair, and Whitman urges the use of this method as a routine measure for all cases of fracture of the neck of the femur in which local treatment is to be attempted.

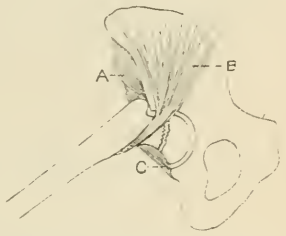


*Fig. 22.*—Reduction and fixation in abduction, showing security assured by direct bony contact of neck and trochanter with the pelvis, also the effect of position on muscular action. A. Abductor group. B. Iliopsoas. C. Capsule.

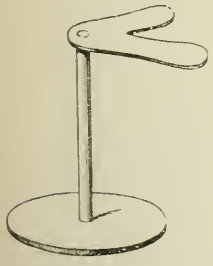

*Fig. 23.*—Pelvic support. Lorenz model.

The details of application are as follows: A piece of ordinary, seamless shirting, cut and sewed in a shape to cover the body and limb, is applied and fixed securely in place by bands passing over the shoulders. This is threaded with several long bandages (the "scratchers"), designed to keep the skin in good condition; it is also advisable to insert a substantial "dinner pad." The patient is anæsthetized, and then placed with the head and shoulders on a box of proper length and about 8 inches in height; the pelvis rests upon a sacral support (*Fig. 23*); this is a thin plate of steel about the size of the hand, of a trowel or heart shape, carried on an upright bar fixed to a wide base or screwed to the end of the table. A wide, firm band of cloth is then carried about the perinæum, the two

ends of which, united over the shoulder and held by an assistant, furnish counter-traction. If the fracture is incomplete, the limb, under gentle traction, is slowly abducted, an assistant at the same time abducting the sound limb to prevent the tilting upwards of the pelvis and to demonstrate the normal range (*Fig.* 24). If the fracture is complete, the shortening is first entirely overcome by the traction and counter-traction. The limb in the extended attitude, under traction, is slowly abducted by the assistant until the trochanter is fairly apposed to the side of the pelvis, the operator meanwhile pressing the trochanter downward and inward. In some instances there is a distinct snap as the outer part of the neck slips beneath the rim of the acetabulum,

*Fig.* 24.—Illustrating attitude in which spica is applied.

and in any event the abduction is increased until the trochanter is firmly apposed to the side of the pelvis. In the first instance the primary object of the abduction is by leverage against the upper border of the acetabulum to overcome the deformity; in the second, by tension on the capsule, to remove folds, to appose the fragments, and by actual contact of bone with bone, to oppose re-displacement. The limb being held in this attitude, the pelvis, the ribs, the bony prominences of the knee and foot, are protected by layers of sheet wadding, and the limb and body are then covered in carefully with cotton-flannel bandages, which are in themselves a protection against pressure. A plaster spica is then applied, extending preferably from

the mammary line to the toes. This should be drawn snugly about the hips, and, most important of all, should completely enclose and support the buttock, not only to provide antero-posterior support, but to prevent the excoriations that are inevitable if the tissues are

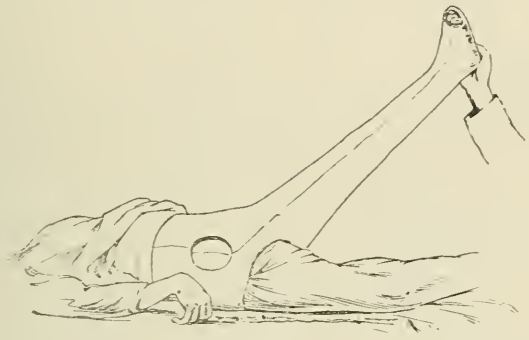

*Fig.* 25.—Long spica as applied for fracture of neck of femur in adult. Illustrating the advantage of an appliance which permits movement without danger of displacing the fragments. An opening has been made to lessen constriction of the abdomen.

allowed to hang over the end of the plaster. The insertion of thin strips of wood or iron about the hip and knee, permits of a lighter bandage than would otherwise be possible. When completed, the bandage is carefully cut away to permit complete flexion of the sound limb; the shirting is drawn over the edges of the bandage, carrying

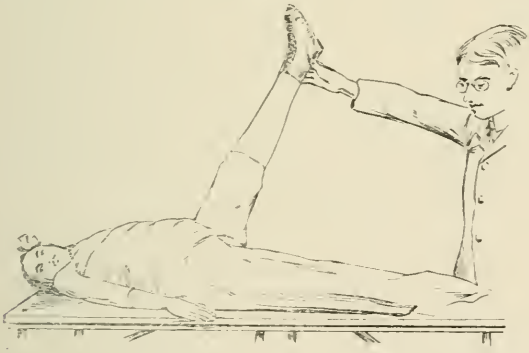

*Fig.* 26.—Spica applied in a child after reduction; illustrating greater range of abduction than in adult (compare with *Fig.* 25).

beneath it the cotton, and is sewn preferably to an outer covering of shirting drawn over the bandage. Thus a smooth, even surface is apposed to the body, and the skin may be kept in condition by drawing the friction bandages ("scratchers") back and forth at intervals. If pressure is feared at any point, openings may be cut.

The short spica may be used in certain cases. A long spica may be shortened at the end of four weeks, and removed at the end of eight weeks; then massage, passive and active motion, may be employed, but the limb should not support weight for at least four months. A **Hip-Brace** that will allow functional use by supporting a part or all of the body weight, combined with **Massage**, is the ideal after-treatment.

In most cases the best routine method is the use of a light, short plaster spica holding the limb in moderate abduction. At first the patient uses crutches, and resumes weight-bearing little by little. After how long an interval treatment may be applied with success is of great importance. One could hardly hope to break up an impaction after three months.

*Fig. 27.*—Ambulatory treatment with limb in extreme abduction (same patient as in *Fig. 26*). In this attitude weight is borne on the trochanter and outer extremity of the neck of the femur.

If this treatment fail, operation might be performed; excision is not advisable, for the joint, if free, is insecure. In fracture, if obliged to excise the head of the femur, an attempt should be made to place the end of the femur in the acetabulum and secure ankylosis; if this is impossible, the upper extremity should be forced forwards beneath the tissues attached to the superior iliac spine. This position is maintained by a short spica bandage and hyper-extending the limb. The patient may walk a little with this, and the support should be continued for a year.

This treatment, of course, is most applicable to favourable cases, but in any case improved functional results are far more likely than under any other method of treatment at present in use.

*Subperiosteal Fractures of the Humerus in Children.*—J. S. Stone[4], of Boston, U.S.A., reports five cases in children from six to thirteen years of age of fractures of the upper end of the humerus, with absence of the usual signs of fracture. In the first case the fracture was entirely overlooked, in spite of the fact that several competent observers examined the case. The other cases were suspected, and radiographed. The symptoms were so similar in each, that the diagnosis might be made without the help of the X-rays. Each occurred in a child beyond the age at which greenstick fracture is common; each resulted from a fall upon the outstretched arm; in each case, absolute inability to use the deltoid ensued; each child could, with varying hesitation and difficulty, raise the hand to the

face and the top of the head, but always with the arm kept as close to the side as possible ; in each, passive motions in all directions could be made to the full normal limits, and were guarded by but slight spasm. There was slight atrophy of the deltoid and scapular muscles in all the cases. The deformity is trifling. There is a very sharp bony ridge on the anterior surface of the neck of the humerus, just at the seat of the fracture, but this deformity might be easily overlooked unless attention was directed to its exact location. There is slight localized tenderness and pain about the shoulder. Crepitus and abnormal mobility were conspicuously absent in each case. Dr. Stone thinks that when, after a fall on the arm or shoulder, children are unable to abduct the arm, but present none of the other signs of fracture or dislocation, and are able to move the arm in other directions, most careful examination should be made to determine localized tenderness anteriorly just below the head of the humerus, together with a slight irregularity in the contour of the bone at the same point. These signs are sufficient to establish the diagnosis of fracture of the surgical neck, and should deter one from attempts by rough handling to secure crepitus or mobility.

*Compound Fractures.*—Dumont[5] recommends the treatment of compound fractures with **Balsam of Peru.** Any foreign bodies are removed with sterilized forceps ; but no cleansing of the wound, and no ligatures are used, unless a large artery is bleeding. The wound is completely filled with sterilized balsam of Peru ; slight movements of the apposed fractured surfaces are carried out to aid the penetration of the balsam to all parts of the wound. If the external wound be small, the balsam may be introduced with a sterilized syringe. No gauze packing, but simply an aseptic dressing, is applied, and plaster of Paris or an extension apparatus.

Paterson[6] reports *anthrax infection* of a compound fracture in a man whose work was to mix animal's hair with lime to make plaster for walls, etc. Whilst at work he received a compound fracture of the lower part of the right humerus. The arm became swollen, etc., and disarticulation at the shoulder was done ; the man recovered, and bacteriological examination showed the presence of anthrax bacilli and a few staphylococci.

*Fractures of the Patella.*—C. S. Plummer[7], in a paper read before the Chicago Surgical Society, proposed the following as a fair statement of the present position of the treatment of recent simple transverse fracture of the patella :—

1. Operative treatment should never be undertaken except under the best of conditions for maintaining asepsis.

2. Granted ideal aseptic conditions, not every case should be subjected to operation, but only those in healthy patients of suitable age, with at least half an inch of separation of the fragments and lateral tears, which compromise the "reserve extension-apparatus," or in patients following arduous occupations.

3. The operative treatment fulfils all the indications of treatment, which the non-operative can only partially achieve; but good functional results follow the non-operative treatment as a rule.

4. Early massage in all cases favours the early and complete restoration of function of the joint, and should be used in all cases.

5. If operative treatment is employed, the open arthrotomy should be used.

6. Absorbable suture material applied to the soft parts is sufficient in nearly every case.

Martin and Thomas[8] have treated 11 cases by **Open Operation**: eight by the subcutaneous method (1 by circumferentiation with the purse-string suture, and 7 by antero-posterior inclusion), and six cases by conservative methods. The results of conservative methods were in no way comparable to those obtained by subcutaneous wiring, or by the open method of suturing. The choice of treatment of fractured patella may be summarized as follows :—

1. The conservative treatment of fracture of the patella is applicable to blow or tear fractures in which the separation of the fragment is not greater than half an inch when the knee is flexed to a right angle, and in which there is no great joint tension. Conservative treatment consists in **Fixation** for ten days, the application of **Adhesive Straps** to approximate the fragments, the use of **Elastic Bandages** to prevent inflammatory exudation, and the employment of **Massage** and **Passive Movements.**

2. All fractures of the patella, independent of the amount of fragment separation, attended by marked and immediate joint tension, should be treated by the open method.

3. All fractures of the patella in which the fragments are separated more than half an inch when the knee is bent to a right angle, should be treated by the open method, the torn tendinous expansions of the quadriceps being closed by mattress sutures, and the patellar fragments being united by silver wire, the insertion of the latter being facilitated by the use of a bone drill with an eye in its boring end.

Lucas-Championniere[9] thinks **Suture** is the only method by which the best results can be obtained. He recommends delay of some days after the accident before proceeding to operation. After most careful antiseptic preparation of the skin, a large flap is turned downwards, a free incision being less dangerous than a small one. The bones are sutured with thick silver wire, either passing through the bone or through the ligament, as the case may require. He usually uses two parallel wires. Very free antiseptic drainage is employed, as he considers this much safer than complete closure of the wound. The limb is not immobilized after the operation.

John H. Gibbon[10] says his experience has been that in fracture of the patella there is always some material between the fragments.

usually portions of the ligament, which will prevent the establishment of bony union. As regards technique, he uses the U-shaped incision; wire is not essential, and he believes that in a large number of cases the fragments may be held in absolute apposition by a careful suturing of the torn ligament about the bone.

*Rupture of Quadriceps Extensor Tendon.*—Norris[11] adds 38 cases of this accident to some 265 cases published by Walker and Maydl, making a total of 303 cases. Of 27 cases collected by Norris, in which the tendon was **Sutured,** there were 27 complete cures. From a study of these cases the following conclusions are apparent :—

1. In the majority of cases the direct cause is muscular violence, a sudden, strong contraction of the quadriceps muscle taking place while the leg is slightly flexed.

2. The site of rupture was most commonly at or near the patella, either above or below, rupture being rare in the belly of the muscle.

3. Symptoms. A snapping sound may be heard; loss of extension unless the rupture is incomplete, when it may be retained. Effusion into the knee-joint, with accompanying signs of inflammation, and a depression may be felt.

4. The diagnosis may be confounded with fractured patella or a severe contusion of the knee-joint; diagnosis is easily made after subsidence of the effusion.

5. Treatment may be operative or non-operative. Operation consists in exposure of ends of ruptured tendon, suture, and fixation of leg in extended position. Massage and passive motion about two or three weeks after operation. The objections to non-operative treatment are the length of time required, and possibility of failure of union.

*Wiring Simple Fractures.*—König[12] discussed this subject at the meeting of the German Surgical Society. Where there is great displacement, where the fracture is near a joint, or where union is likely to be unsatisfactory, as in the case of the femoral neck, early operative exposure, reposition, and suture are indicated. Such interference should be undertaken within the first eight days, or the changes taking place at the seat of the fracture may render the operation very difficult. In his opinion the chief indications are : (*a*) Dislocation of the fragments to such a degree that a satisfactory union cannot be obtained (many of the fractures of the condyles, especially at the elbow); (*b*) Where the fracture implicates a joint, especially those of the humerus; (*c*) Where the fracture is multiple or complicated by dislocation; (*d*) In certain fractures where imperfect union is to be feared, as in those of the femoral neck, and there the operation should be done especially early, as absorption of the neck takes place rapidly. He has operated on the femoral neck in four cases, using aluminium bronze sutures, and suturing the capsule.

Allison and Jones[13] report two cases (one of fracture of surgical neck of humerus, and one of hip) where a French round nail was used to wire the broken surfaces together, with a good result.

REFERENCES.—[1]*Quart. Med. Jour.* Aug. 1903; [2]*Lancet*, Mar. 12, 1904; [3]*Med. Rec.* Mar. 19, 1903; [4]*Boston Med. and Surg. Jour.* vol. cli. No. 6, p. 157; [5]*Presse Méd.* Dec. 30, 1902; *Med. Chron.* June, 1904; [6]*Lancet*, April 23, 1904; [7]*Ann. Surg.* Jan. 1904; [8]*Ther. Gaz.* Feb. 15, 1904; [9]*Arch. Inter. de Chir.* vol. i. fasc. 1, *Treatment*, Aug. 1903; [10]*Ann. Surg.* June, 1904; [11]*Inav. Penns. Med. Bull.* Dec. 1903; [12]*Deut. Med. Ztg.* May 9, 1904; [13]*Inter. Med. Jour.* May, 1904.

**FRONTAL SINUSITIS.** (*See* NASAL ACCESSORY SINUSES.)

**FURUNCULUS.** *Priestley Leech, M.D., F.R.C.S.*

One of the best applications suggested by a Parisian dermatologist is the application to the boil by painting of **Iodine** ℥j in **Acetone** ℥vj. The use of this solution is said to check the development of boils and carbuncles.

Dr. Herman[1], of the Hospital at Haine St. Pierre, Belgium, has used the injection of **Oxygen Gas** for the treatment of boils, carbuncles, and anthrax. He fastened a tube to a receptacle containing oxygen gas under a pressure of 120 atmospheres; the needle of an ordinary hypodermic syringe was attached to the tube, and this was introduced under the skin around the boil, and a litre of oxygen gas injected. The result is rapid and effective. The gas has also been injected in many cases of threatened suppuration, with an excellent result. The apparatus used is cheap and portable.

REFERENCE.—[1]*Med. Press*, Dec. 16, 1903.

**GALL-BLADDER.** *A. W. Mayo Robson, F.R.C.S.*

Seeing that **Cholecystotomy** has led to such good results, both immediate and remote, in the surgery of gall-stones, the operation should not be too hastily condemned and replaced by **Cholecystectomy** as a routine procedure. My own experience is that cholecystectomy, though a more prolonged operation than simple drainage of the gall-bladder, can with due care be performed with hardly more risk; and that when the gall-bladder is contracted and infected, or if inflamed and thickened, or even gangrenous, or if much dilated, it is better to remove it. By means of the operation that I have fully described[1], there is no difficulty in deciding as to the bile ducts being quite free from concretions, a necessary condition before cholecystectomy is justifiable.

In ordinary cases of gall stones, cholecystotomy with efficient drainage of the gall-bladder is a very safe and efficient operation, and if the ducts are clear, there need be no fear of fistula or of recurrence of gall stones. Cholecystectomy in malignant disease is a safer operation than I think has been generally recognized, and in 12 cases, in which at the same time I removed a portion of the liver along with a tumour of the gall-bladder, 10 of the patients recovered, and of these 5 are at

the present time alive and in good health at periods of five and a half, five, four and a half, four, and one and a quarter years respectively, subsequent to operation.

Maurice H. Richardson[2] asserts that the practical arguments in deciding between extirpating and draining the gall-bladder are four in number, and are based: (1) Upon the comparative dangers of the two methods; (2) Upon the comparative efficacy of preventing the recurrence of gall stones; (3) Upon the advantages of temporary drainage of the biliary passages; (4) Upon the possible necessity and increased difficulty of draining those passages at some future time. The arguments based on the two first considerations are about as favourable to one operation as the other. The advantage of obtaining prolonged drainage cannot, in the author's opinion, be overestimated. He holds, therefore, that cholecystectomy should be considered an operation of last rather than of first resort; and an operation for old, contracted, infected, and useless gall-bladders. The increased difficulty of secondary operation in cases in which the gall-bladder has already been extirpated, is another argument in favour of cholecystotomy.

Charles L. Scudder summarizes his preferences as follows: "Cholecystotomy should be done in those cases of gall-bladder and biliary-duct surgery in which quick drainage is needed for the deeper ducts, and in which the surgeon is not absolutely sure that the deeper ducts are entirely free. Cholecystectomy should be done in cases of acute cholecystitis, in cases of cholecystitis resulting in gangrene and empyema of the gall-bladder, in small contracted (infected) gall bladders which are functionally useless and which will not be of service in facilitating drainage, and in all cases in which the surgeon is morally sure that the deeper ducts are free from obstruction."

Lilienthal[3] records 42 cases of primary cholecystectomy, 29 of which were operated upon during the progress of acute active infection, while the remaining 13 were in the chronic or latent stage of infection. The youngest patient was a girl, eleven years old, who had suffered for years from cholelithiasis. The oldest was a man of sixty-eight, with acute calculous cholecystitis and empyema of the gall-bladder. A history of antecedent typhoid was obtained in 8 cases. Gangrene of the gall-bladder, more or less extensive, was present in 7 cases. Choledochotomy was performed six times together with cholecystectomy. Marked jaundice was present in 14 of the patients. Drainage of the hepatic duct was practised twice. Only one death occurred, due to streptococcus infection existing before the operation. The most noteworthy post-operative complication was broncho-pneumonia, usually on the right side. It was encountered five times.

*Jaundice in disease of the Biliary tracts.*—In a paper on this subject, Deaver[4] quotes the experience of Kehr. The latter states that "jaundice is absent in 80 to 90 per cent of gall-stone cases, and even

in stones lodged in the common and hepatic ducts the jaundice is absent in 33 per cent ; the stones, not only small ones, but even those attaining the size of walnuts, may remain latent in the common duct not only for weeks, but for months and years." My own experience does not coincide with that of Kehr, for I think it will be found that there are very few cases of common duct cholelithiasis in which at some time during the course of the illness there has not been a certain degree of jaundice ; though in some cases it is only shown as an icteric tinge in the conjunctivæ. Even in gall-stones in the cystic duct, a trace of catarrhal jaundice after each attack is a common event, though it may only be shown by a mere trace of bile in the urine.

Kehr is convinced that it is wise to incise and sound the common bile duct in every case of gall-stones, and that every choledochotomy should be followed by drainage of the hepatic duct. This procedure, combined with cholecystectomy, has given the best results and the safest protection against recurrence. It is contra-indicated in cases of acute suppurative cholecystitis on account of the danger of spreading infection. In uncomplicated cases the mortality is from 2 to 3 per cent. In these extreme views I cannot agree, for with the exposure that the operation I regularly perform affords, it is quite easy to ascertain the presence or absence of gall-stones in the common and even in the hepatic ducts without the performance of choledochotomy, and after the performance of choledochotomy the results show that drainage of the hepatic duct is rarely necessary or advisable, and that drainage through a cholecystotomy opening is safer and equally efficient.

REFERENCES.—[1]*Brit. Med. Jour.* Jan. 24, 1903 ; [2]*Bost. Med. and Surg. Jour.* Feb. 11, 1904 ; [3]*Ann. Surg.* April, 1904 ; [4]*New York Med. Jour.* Aug. 15, 1903

## GASTRIC DISORDERS.

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*(Tr. by F. Gardiner, M.D.)*

During the past year little has been done to advance the treatment of gastric disorders. On the other hand some noteworthy contributions have been made in the matter of diagnosis and methods of analysis of the stomach's contents. In the *Medical Annual* for 1904 (page 365) Sahli's new method of chemical analysis was discussed ; this plan depending on the estimation of the fatty constituents of a test meal before its administration, and after its removal from the stomach. The special advantages of this proceeding were considered to be that it settled (1) The character of the fluids secreted in the stomach during digestion ; (2) The amount of food which remained in the stomach. Several authors have tried this method, for instance, Kociczkowsky[1], Boeninger[2] and E. A. Aronson[3], of New York, the latter of whom worked in Ewald's laboratory. They have found that the fatty estimation of the stomach's contents is not sufficiently accurate, and the result does not compensate for the considerable time spent in the examination. From a practical standpoint Sahli's method is of doubtful utility.

The albumin digestion method, which depends on calculating the amount of white of egg which, when treated by a known quantity of gastric juice, is changed into albumose or peptone, is estimated principally in two ways: (1) Hammerschlag's; (2) Mette's. Hammerschlag mixes 10 cc. of 1 per cent egg-albumen solution with 4 per mille of free hydrochloric acid in 5 cc. of filtered gastric juice. After the mixture has remained some time at the body temperature it is transferred to an Esbach's albuminometer, and tested with picric acid, which only precipitates the undigested albumin, leaving the albumose and peptone in solution. A control experiment is carried out by using water instead of gastric juice. By this means the digesting capacity of the gastric juice can be expressed as so much per cent. Mette, who uses coagulated egg-albumen, sucks the white of egg in a fluid state through a thin glass tube of the thickness of a hen's quill, and coagulates it in a water bath. Such a glass tube about 5 cms. long is laid in a shallow glass dish and 10 cc. of filtered gastric juice poured over it, the whole being kept at body heat for some time, with the result that the coagulated albumen is dissolved regularly by digestion of the juice. Roughly, powerful stomach secretion dissolves out 5 to 6 mm. as fluid, the quantity varying with the amount of pepsin in the gastric fluid. It is advisable each time to use the same proportion of free hydrochloric acid, the strength being such that in 100 parts of the gastric juice there is enough of it to neutralize 30 cc. of decinormal salt solution.

Comparing the two methods, Mette's has the double advantage of being simpler and more reliable. Young[4], after trial of the methods, finds that in 75 per cent of the cases he gets identical results in both, and is satisfied that the hydrochloric acid secretion is mostly, though not always, proportional to that of the pepsin. Excess of hydrochloric acid usually goes with excess of pepsin, but occasionally excess of acid is combined with deficient pepsin. In the first case meat and white of egg are easily digested, but in the second, a diet which is free from albuminous matter but rich in carbohydrates must be given.

Objections have also been raised against Mette's plan. Nierenstein and Schiff[5] found that the human gastric juice contains substances the action of which hinders the digestion by this method of procedure. The secretion must be diluted to a sixtieth of its strength, and then the digested egg albumen in the cylinder corresponds strictly to the quantity of pepsin previously in the stomach contents. Therefore it may be that the ascertained clinical results founded on it so far are unreliable. On the other hand, Kropf[6] and Kaiserling[7] (Ewald's clinic) examined many cases by the new and old method, and found similar diagnostic results. At Ewald's clinic Mette's method is carried out daily.

Surgeons have always sought for means of diagnosing *cancer of the stomach* at the earliest moment. Salomon[8] gives a new method based

on the fact that a serum containing albumin is always separated from cancer tumours. The stomach of the patient in a fasting condition is washed out thoroughly with water in the evening, and in the morning 400 cc. of physiological salt solution is introduced. This is subsequently removed, the albumin estimated by Esbach's reagent, and the nitrogenous constituents by Kjeldahl's method. The fluid from a cancerous stomach gives a thicker and more flocculent precipitate of albumin than the normal, and the nitrogenous constituents exceed 20 mgrams in 100 cc. of the fluid washings from the stomach. Sigel[9] has confirmed this in 20 cases in Ewald's clinic, the method being particularly useful in carcinoma of the lesser curvature, where no tumour is palpable, and the symptoms are those of chronic gastritis.

Whether this is or is not a distinct advance from the surgeon's standpoint is doubtful, when one considers the fact that for a tumour to secrete albumin it must have reached a certain size, and even have passed the early stage which is suitable for surgical interference. Another disadvantage is that the method fails to differentiate between gastric ulcer and cancer, because in both Sigel has found free albumin in the washings, probably owing to the fact that it is the ulcer in the carcinomatous mass which produces the albumin.

Glucinski[10], in order to fix definitely the commencement of such a degeneration, has proposed a method resting on the following considerations. When a pyloric ulcer changes into a cancer, the secretion of hydrochloric acid is gradually stopped and a slimy catarrhal condition of the mucous membrane develops, which does not occur in a healthy healing ulcer. As a result of this gastric catarrh, there is reduction in the stomach secretion. Possibly at first the secretion may be sufficient for a slight meal such as a test breakfast, and free hydrochloric acid can then be found ; but for a richer meal the acid is insufficient, and therefore the contents of the stomach should be examined as follows :—

1. In the morning while fasting.

2. After a test breakfast of an egg or a roll with $\frac{1}{3}$ litre of water, removed from the stomach $\frac{3}{4}$-hour later.

3. Four hours after a test-lunch of beefsteak, bread, and potatoes.

The desired proofs of failure of hydrochloric acid secretion are thus obtained, and if there are, simultaneously, the symptoms of stenosis of the pylorus, the existence of malignant degeneration of an ulcer is proved.

Sigel employing this method in 18 cases at Ewald's clinic found that it succeeded better than all other methods, and in many cases the diagnosis was established when the more ordinary methods had failed. When the differential diagnosis between a benign and malignant pyloric stenosis on the one hand, and perigastritis and carcinoma on the other is in question, it is of great value. The inconvenience to the patient of introducing the stomach tube three times in one day is great,

but is quite counterbalanced by the momentous character of the decision at stake.

An important diagnostic method is brought forward by Gläsner[11], working also at Ewald's clinic. At the fundus of the stomach digestion takes place, both by rennin and pepsin ferments, but when the pylorus is reached the rennin is absent and only pepsin acts. If there is a tumour of the fundus or lesser curvature of the stomach, the rennin will be considerably reduced or quite absent; but if the pylorus is alone affected, there is normal rennin digestion and the pepsin is less. An easy method of proving the existence of rennin is by mixing some milk with filtered stomach contents, when coagulation of the milk takes place at body temperature if rennin is present. The position of a non-palpable growth can be readily determined by these facts In 13 cases examined this method has proved successful. If pepsin and rennin are both markedly diminished, a tumour of the fundus is present, but if the rennin is in excess of the pepsin one suspects the existence of a tumour of the pylorus.

It becomes more and more evident that not only the secretions, but the *motor conditions* of the stomach are of great importance. The well-known **Salol** method of Ewald and Sievers has been lately perfected by Winternitz through the use of **Iodipin**, an iodine fat. Von Spanje[12] praises this drug because the contained iodine is not set free in the stomach, the decomposition only taking place in the intestine through the action of the bile and pancreatic juice, and the iodine almost immediately thereafter being detectable in the saliva. The iodipin is given in capsule containing 1 gr. in the morning along with a test breakfast, and the detection of the iodine in the saliva is carried out according to known rules. In normal digestion it is found after about fifty minutes; in stenosis or closure of the pylorus, also with diminished or suspended bile secretion in the duodenum, the time is much longer, while in failure of hydrochloric acid digestion (achylia gastrica) a hastened appearance occurs.

Korcynski[13] has proved, contrary to the generally accepted opinion, that aromatics have a pernicious influence in patients with a weakened stomach. They act by producing diminished secretion of hydrochloric acid and pepsin, by dilatation of the vessels of the organ and subsequent pouring out of serum into the stomach, which is followed by an undesirable weakening of the gastric juice. In the normal individual, spices produce at first irritation, and later retardation of the secretion, whilst the motor activity is increased.

According to Weidert[14] a contrary effect is produced by **Carbonic Acid** (carbonic acid waters) on the stomach, which cause (1) Early appearance of free hydrochloric acid; (2) Increase of the acid secretion · (3) Shortened time of digestion.

For the diagnosis of *gastric ulcer*, unless blood is found macroscopically, an analysis of the gastric contents and fæces for blood should always

be made, as it is of great value. Boas[15] insists that this is a characteristic phenomenon, which he designates "concealed gastric hæmorrhage." Ewald in the early diagnosis of latent stomach tumours had previously made use of the fact of the appearance of a small amount of blood in the stomach contents. The stomach contents or fæces are examined by the aid of guaiac or aloin reaction. (As much aloin as lies on the point of a knife is dissolved in 3 to 5 cc. of 70 per cent alcohol. About 20 grams of the fæces are mixed with acetic acid and shaken up well with ether. To the decanted ether 20 to 30 drops of turpentine and 10 to 15 drops of aloin solution are added, when if blood is present, there appears first a light red, then a cherry red coloration). Boas found concealed blood in the fæces from 65 out of 67 cases suffering from cancer of the stomach, or gastric or duodenal ulcers. To eliminate any error the patient ought to eat no red or half-cooked meat for at least two days before. The search must be carried out on several occasions, and every other source of bleeding must be excluded.

In the neighbourhood of typical gastric ulcers there are found, as is well known, small lesions of the mucous membrane, so-called *erosions*; these have lately been the subject of discussion, and are again brought to the front. Einhorn, Pariser, etc., claim that this condition is a special disease. The diagnosis is made by finding small shreds of mucous membrane in vomited matter from the empty stomach, and a previous history of dyspepsia. Ewald had combated this view at the Congress of Internal Medicine in Wiesbaden. The researches of his pupil Leuk[16] have shown that such exfoliation of the lining of the stomach appears also in ordinary gastric lesions, especially in chronic gastritis. Elsner[17] confirmed this opinion by finding shreds of mucous membrane tolerably abundantly in chronic gastritis, in achylia gastrica, and less frequently in other stomach affections. The appearance of such shreds must, however, indicate a great weakness of the gastric lining. Henschen[18] has found erosions of the gastric mucous membrane in three cases of tuberculosis, two of nephritis, twice in cerebral affections, and once in pneumonia, and from these he concludes that such erosions are not so much manifestations of local troubles as the outcome of general illness.

For the *treatment* of gastric ulcers great stress has lately been laid on the administration of **Fatty Foods.** Large quantities of butter, cream, and prepared fatty dishes, and even pure fat such as olive oil, are given. Fat checks the secretion of hydrochloric acid, has a stimulating effect on the motion of the bowels, and makes a protection for the surface of the ulcer. Walko[19] orders **Olive Oil** after fresh gastric hæmorrhage, because the thrombus formed is in less danger of being detached by this than by solid food or even pieces of coagulated milk. The oil is first given in tablespoonful doses, gradually increased until 50 cc., thrice daily, are taken. The patient is directed to wash his

mouth afterwards with aromatic lotions, or if the nausea is great, the oil is even poured through a soft œsophageal tube. Conheim[20] uses the oil also in other cases, for instance in spasm of the pyloric valve with subsequent gastrectasis, he aims at the production of early healing by the daily introduction of large quantities of oil. In cases of organic stricture of the pylorus oil is also very beneficial, acting mechanically as a lubricant and diminishing the friction, which causes great trouble. In carcinomata causing stenosis of the pylorus, the spasm will be relieved or diminished by the oil. Pyloric ulcer cases, with or without increase of acid secretion, in which from one to four hours after eating there are painful cramp-like symptoms, can be cured in a short time by the use of oil (or milk of almonds) provided there are not any perigastric complications. In spite of the results above recorded, the action of the oil is by no means so uniform and certain as was first anticipated. In many cases there is no alleviation of pain, while in others, patients have an insuperable repugnance to the oil flavour; therefore, the older methods of treatment by the so-called rest cure cannot be dispensed with, and will be generally applicable. The same applies to rectal nourishment by means of food enemata, no support being given by the mouth for the first three or four days.

For food enemata Bial[21], following the latest researches, has recommended :—

| | | | |
|---|---|---|---|
| ℞ Peptone siccum | | Tinct. opii | gutt. 10 |
| Saccharl. lactis | | Aquam | cc. 250 |
| Alcohol absol. | āā grams 25 | | |

This fluid to be injected twice daily.

According to Bial's estimate 66 per cent of the peptone will be absorbed, and the presence of the alcohol increases the nourishing power of the enema from 450 up to 475 calories per day. Unfortunately, in spite of the experience of those recommending them, these enemata are not always well borne, and set up such a strong irritation in the bowels of some patients that they are often quickly ejected.

The statements of Bardet[22] concerning the uses and advantages of **Milk Diet** are very interesting. He considers that most people suffer from over-eating, and that the standard which the new physiology sets up regarding the daily amount of food, is too high. Modern opinion holds that three litres of milk are not sufficient for the needs of a growing man, but Bardet succeeds with a much smaller quantity. With a person weighing 55 kilos he can maintain a constant weight for ten days on only two litres of milk daily. Whilst the amount of albumin for a young adult is calculated at 90 to 100 grams, Bardet only employs 46 grams (egg-albumen being used). Meanwhile his whole food comprises 1980 to 2000 calories for a body weight of 56 kilos, that is to say 35 calories per kilo. This is not such a decrease, and the low amount of albumin approaches that taken by vegetarians, who, as is well known, live on yet less. From the experiments of Gläsner and Caspari[23],

carried out in my hospital on a vegetarian, it is apparently feasible that 5 grams of nitrogen for a day, equalling 30 grams of albumin, are sufficient.

**Thiosinamin**, an allylthiourea which dissolves easily in water, alcohol, and ether, possesses the property of softening cicatrices and making them extensile. On this account it has been employed recently in a variety of pathological conditions, especially of a surgical nature. Hartz[24] has used it in a case of citatricial pyloric stenosis, giving in the course of a month 14 injections into the back, the solution being 15 per cent in alcohol. Half a hypodermic syringeful was injected on each occasion. The result was very gratifying, and the patient, formerly much emaciated and suffering greatly, was completely cured. Similarly Tabora[25] reports a favourable result in a case of hour-glass contraction of the stomach. According to the statements of Tousey[26], Schweninger[27], and Eisenberg[28], thiosinamin produces good and marked effect in gastric dilatation.

Baumstarck[29] has on the advice of Ewald subsequently tested these observations. He employed a 20 per cent glycerin and water solution with absolutely negative results. In five cases of malignant tumours not the slightest influence was seen, and in six other cases of slight pyloric stenosis and perigastric adhesions, no improvement was found after the most careful examination. Baumstarck sounds a warning note against too much reliance on this remedy, because thereby one might let slip the favourable opportunity for a life-saving operation.

Norrström[30] orders **Massage** of the stomach to be applied, first to the right and then to the left side of the patient. He has obtained his best results in atony of the stomach, which requires, however, at least four to five weekly applications. In nervous affections of the stomach manual methods must not be employed. Further, Mering[31] has already shown that the motility of the stomach is, as evidenced by the emptying of the contents, more strongly and quickly influenced from the right side, while in sitting, standing, or lying on the left side, the effect is weaker and slower. Neumann[32] on the contrary asserts that the usual physical methods, with the probable exception of moist heat, exert no influence on the secretion or motility of the stomach. The undoubted results obtained by this method depend much more on a reflex action through the spinal segments which send sensory nerve fibres to the stomach. No healing is thus produced, only diminution or suppression of the symptoms.

Schulz[33] has done some good work in the examination of cases of gastric ulcer with a view to finding out the *permanency of results* with internal treatment. He has chosen cases which were undoubtedly gastric ulcers, judging from the appearance of gastric hæmorrhage. The cases were selected in part from the Breslau clinic and in part from the New General Hospital at Hamburg, and extended from 1884 till 1900. The statistics show chiefly that reliance cannot be

placed on immediate results in estimating the value of a special treatment, for many patients discharged as improved have appeared later to be really worse, whilst on the other hand, a number of cases proving very rebellious to treatment, and giving very moderate immediate results, healed after some time with or even without further treatment. If also the mortality from ulcus ventriculi (5·4 to 9·1 per cent) is apparently not very high, nevertheless it would appear that internal treatment gives numerous failures. 29 cases are discussed by Schutz. If a minimum of six months without relapse after cessation of treatment were taken, it would then be seen how many there were who, since their discharge, had again suffered from feeble digestion, loss of bodily strength, or any such inconvenience. Patients are considered as cured who are able to follow their usual vocations free from inconvenience so long as they take a selected diet. The author gives the following numbers :—

| Cured. | Improved. | Not Improved | Dead. |
|---|---|---|---|
| 16·5 | 95 | 15 | 16 |
| 57 per cent | 32 per cent | 5·5 per cent | 5·52 per cent |

From these data it is evident : (1) That the requirements of a proper treatment are first of all, that it must be sedulously carried out, and that in the event of favourable progress, the patient must not be lost sight of until the desired cure is obtained ; and (2) That in cases of delayed improvement, complications must be thought of, and the question of operative interference must eventually come up.

Borri[34] has studied the effects of **Endo-faradization** and **Endo-galvanization** of the stomach as regards their effects on the secretion, motility, and sensation of that organ. This is practised by filling the stomach with water and then introducing a tube, containing a wire spiral reaching to the point, which is used as an electrode. The results showed that galvanism with the negative pole in the stomach exercised an anæsthetic effect, but that neither galvanism nor faradism had any effect on the secretion or movement of the walls of the stomach.

For some time the employment of pure **Gastric Juice** from the dog has been recommended by Petersburg, and in spite of its unappetizing appearance, has shown distinct advantages. Hepp[35], of Paris, who secured gastric juice from the stomachs of swine instead of from dogs, recorded established results from its use, and placed it on the market under the name of **Dyspeptine.** On Ewald's advice Loeb[36] has tested these assertions, which he showed to be entirely fallacious, the so-called dyspeptine containing neither pepsin nor hydrochloric acid. (*See* also Dyspepsia, and Stomach, Disorders of).

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**GASTRIC ULCER.** (*See also* GASTRIC DISORDERS.)

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A symposium on gastric ulcer formed a feature of the meeting of the American Gastro-Enteriological Association in June, 1904.[1] Several speakers held that it is not often possible to make the diagnosis certainly, except when hæmorrhage can be demonstrated, and that numerous cases present none of the typical symptoms, so that not infrequently the existence of the disease is unsuspected until perforation has occurred. There was a practical unanimity in recommending as the salient features of the treatment, rest in bed with rectal feeding at first, an exclusive milk diet later, and after several weeks, a very gradual resumption of a carefully selected mixed diet. Some of the members advised a liquid diet until the ulcer had healed. **Orthoform,** and large doses of **Bismuth** were generally recommended when necessary for pain, **Bismuth** or **Nitrate of Silver** to assist in the cure, and **Iron** for marked anæmia, while for hæmorrhage absolute rest in bed, applications of **Ice,** and swallowing pieces of ice, in addition to **Suprarenal Extract** or other efficient astringent drugs, were advised.

Ulcers which do not show a tendency to heal under such treatment, and cases especially which involve the pylorus, were held to demand surgical intervention. Joseph Blake, to whom was assigned the consideration of the surgical treatment, conceded that acute ulcer is essentially a medical disease, though chronic cases often require the knife, as do the more important complications, particularly perforation, since 98 per cent of perforated gastric ulcers prove fatal unless operated upon. There is a growing tendency among gastrologists to consider chronic gastric ulcers as cases for the knife, particularly when, after a thorough trial of the most effective medical measures, a cure does not result. Murdoch[2] points out that, whereas in acute ulcers hæmorrhage may usually be soon controlled, in chronic cases the edges of the ulcer are hard and unyielding, so that contraction of the vessel cannot well take place. The fibrous tissue which surrounds such an ulcer also tends to prevent efforts at repair.

The gastric pain and the vomiting which accompany ulcer of the stomach can usually be controlled by **Rectal Alimentation** and stopping all food by mouth. Rectal feeding, however, has two disadvantages,

namely, great thirst, and a bad taste in the mouth, which may cause the patient much distress. To prevent these, W. Pasteur[3] suggests substituting 10-ounce enemata of plain water at a temperature of 100° for the nutrient injections. The enemata are given every four to six hours according to circumstances. In most of the author's cases it was possible to supplement the enemata by giving small quantities of peptonized milk by mouth before the end of a week, but in several instances his patients had nothing by mouth for ten days, yet made no complaint, and gave no indication that they were any the worse for the prolonged abstinence.

J. Schultz[4] has summarized statistics gathered from numerous sources (including several German clinics and hospitals) with regard to the after condition of patients treated medically for ulcer of the stomach. They show that the immediate results of such treatment are not decisive. Some cases apparently cured relapse later; and, on the other hand, numerous cases in which the results of the treatment are only moderately successful at first, after several repetitions of the course (and sometimes even without such repetitions) finally get well. The mortality of gastric ulcer is only 5·4 to 9·1 per cent, yet the cases treated medically often enough turn out badly. The lesson experience teaches is that one should not fail, when a case is progressing favourably, to persist with the treatment till a final cure results; and when complications arise, or any case proves stubborn, to advise surgical intervention.

Dunham[5] calls attention to the frequency with which ulcer undergoes *carcinomatous degeneration*, and the importance of guarding against it by prompt and effective treatment before this disastrous change occurs. While some observers have rarely noted this change in gastric ulcer, others hold it to be very common. Zenker believes that "every case of cancer of the stomach develops upon a previous ulcer." Mayo Robson, Moynihan, Ochsner, Futterer, and the two Mayos are said to hold that a majority of gastric cancers are results of ulcer or some of its complications. Rosenheim, in his thorough study of carcinoma of the stomach, found almost uniformly that the mucosa was atrophied, except in cases engrafted on ulcer, when the mucosa was intact. All observers agree that in gastric cancer generally, the secretion of hydrochloric acid is greatly diminished or wanting, except in the case of those developed in the site of an ulcer, when the secretion of HCl is usually either normal or high till very near death. It is also well known that in most cancers of the stomach the hydrochloric acid is very low or absent, which would seem to make against the view that ulcer causes a majority of them. Dunham urges proper treatment medically of simple ulcer in its first stages, operation in chronic ulcer, and prompt surgical treatment, of course, after carcinoma has developed.

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**GASTRO-INTESTINAL DISORDERS (Infantile).** *G. F. Still, M.D.*

*Diarrhœa.*—The classification of the various affections of the intestine which are commonly grouped together as "infantile diarrhœa" has puzzled most writers, from the variability of the clinical picture.

T. M. Rotch[1] would divide the diarrhœas of infancy primarily into (1) Functional, and (2) Organic. The functional diarrhœa includes those conditions in which there is disturbance of the function of the intestine without known lesions. These disturbances may be due to fright or dentition; to simple indigestion of food; or to toxic products being eliminated in the intestine. In the organic diarrhœas there are lesions of the intestine, and these lesions are caused by specific organisms, either directly, or indirectly through their toxins.

Organic diarrhœa Rotch would subdivide into two varieties: (1) Non-inflammatory; (2) Inflammatory. The non-inflammatory includes conditions which arise from acid fermentations and albuminous decomposition, processes dependent on micro-organisms, whence he derives the synonym "fermental diarrhœa." This non-inflammatory form may be acute or chronic, and with it the intestinal mucous membrane may be normal, or there may be a desquamative catarrh. The inflammatory diarrhœa, which he would make synonymous with "ileocolitis," represents a large group of affections, each presumably having its own specific micro-organism; and in this group are included all those diarrhœas in which marked lesions of the intestine are found. According to the lesion present these inflammatory cases might be subdivided into: (*a*) Simple catarrhal inflammation, which includes the non-ulcerative form of follicular inflammation; (*b*) Follicular inflammation with ulceration; (*c*) Pseudo-membranous inflammation. This seems simple enough, but, as Rotch himself admits, its practical value is very limited; for even the primary distinction between a functional and an organic diarrhœa is sometimes difficult, a non-inflammatory may pass into an inflammatory diarrhœa, and it is usually quite impossible to foretell what lesions will be found in the intestine. The following table may assist in the differentiation of the two forms of organic diarrhœa in infants.

| Non-Inflammatory. | Inflammatory. |
|---|---|
| (1) Small intestine mostly | Large intestine mostly |
| (2) 10 to 12 evacuations daily | 10 to 50 evacuations daily |
| (3) Little or no blood | Blood |
| (4) Mucus | Mucus |
| (5) No tenesmus | Tenesmus |
| (6) Very little abdominal tenderness or pain | Abdominal tenderness and pain |
| (7) Pyrexia 104° F. for 1 to 2 days, then falls by crisis | Pyrexia 104° F at first, falls gradually, becoming normal after some weeks |
| (8) Slight or no lesions in intestine | Lesions marked in intestine |

Perhaps for practical purposes the most important point to be determined is whether the small or the large intestine is chiefly affected, and to some extent this can be done by the size of the stools, which, when the small intestine is chiefly at fault, are large and not extremely frequent, and when the colon is most affected, are small and extremely frequent. In the former case treatment should be by the mouth, in the latter by the rectum.

The frequency of œdema in infants with diarrhœa has been emphasized by R. A. Potter[2], who mentions a series of cases in which this alarming symptom rapidly disappeared when proteid in sufficient proportion (*e.g.*, 2·5 per cent) was added to the watery diet which was being given during the diarrhœa. This œdema is quite independent of any renal affection.

Treatment.—Hutinel[3], discussing the feeding of infants with acute diarrhœa, says that "milk, which is food for a healthy infant, is poison for an infant with diarrhœa." He recommends **Plain Water** alone for twelve or fifteen hours, or even for forty-eight hours if necessary, and then the most cautious return to stronger foods. Helprin[4] advises **Albumen-water** at the outset for one day, the mixture consisting of the white of one egg to 8 oz. of sterile water, with 5 grs. of sodium chloride, and a small quantity of brandy or whisky. On the following day he would give **Barley-water**, a tablespoonful of "prepared barley" added to a pint of water and boiled for twenty to thirty minutes; just enough milk-sugar should be added to make it palatable. If the infant tires of barley-water, the following is suggested as an alternative: Two tablespoonfuls of ordinary flour, in a dish retained in an oven till the flour is well browned, then dissolve or mix in a little cold water; this is now gradually added to and stirred in two pints of water while boiling. The same writer insists on the value of **Gavage**, *i.e.*, feeding through a stomach-tube, in many of these cases; a method which has for several years been recognized as of great value in cases of obstinate vomiting, whether associated with diarrhœa or not.

**Acid Creamless Milk** has recently been advocated by Rothschild[5] as a food in acute diarrhœa of infants. The cream is separated from the milk by centrifuging, and the creamless milk is then acidified by the addition of pure cultures of lactic acid ferment: 30 to 60 cc. of this food were given at each feed. The results were most satisfactory; 13 out of 14 infants, some of whom were extremely ill with diarrhœa, recovered. **Buttermilk** has also been recommended by Rommel[6], who says that its value lies in the small amount of fat it contains, and in the fine division of the casein which is brought about mechanically by the churning process, and in the presence of lactic acid, which prevents abnormal fermentation. **Gelatin** in sterilized solution, when added to the feeds in cases of infantile diarrhœa, has given good results according to Weill-lumière and Péhu[7]; 1 gram of gelatin in

$\frac{1}{10}$ per cent solution is given with each feed, 6 to 8 grams being given altogether in the twenty-four hours. The gelatin must be absolutely pure; the commercial gelatin is often contaminated with bacteria, including the tetanus bacillus. The effect of the gelatin has been to diminish the number of stools, increase their consistency, and restore them to a normal character.

In the worst cases there is perhaps no treatment more effectual in producing a temporary rally than the **Subcutaneous Infusion** of normal saline solution. H. T. Hicks[8] recommends that about 4 oz. should be administered thus every six hours, with the addition of a very little brandy if necessary. At the same time small *saline enemata* (normal salt solution) should be given, some of which may be absorbed, and what is rejected will at any rate serve to wash out the bowel.

As to drugs, Rotch (*loc. cit.*) considers it rational to give **Bismuth**, which he says can pass through the whole course of the intestinal tract, and which he has found colouring the mucous membrane far down in the colon. He makes the important remark that no germicide has been found which will, without harm to the patient, kill the offending micro-organisms in the intestine, or even counteract to any degree the effects of their toxins. Hutinel (*loc. cit.*), who states that antiseptics are of some value in chronic cases of diarrhœa, considers that they are quite useless in the acute cases. When the diarrhœa is prolonged, **Creosote** is recommended by Soles[9], who says that creosote or its salts, with or without cod-liver oil, is one of the most efficient forms of medication; it prevents fermentation, increases assimilation, and promotes nutrition. **Guaiacol**, or the **Tannate of Creosote**, is specially recommended, the latter especially where there is much diarrhœa; $\frac{1}{2}$ to $\frac{1}{2}$ gr. of this with elixir of **Pepsin**, or with **Sodium Glycerophosphate**, is to be given daily.

The various preparations of **Tannin** have been much praised by some observers. Preiss[10] records a series of 150 observations on the use of **Tannigen, Tannoform**, and **Tannalbin.** Tannigen he found quite inert; tannoform gave relief in some cases, whether the large or the small intestine appeared to be chiefly affected, and in such different conditions as chronic enteritis, cholera infantum, and tuberculous diarrhœa. In the last form of diarrhœa, as well as in various forms of infantile diarrhœa, tannalbin gave good results.

In the worst stages of cholera infantum, Waugh[11] advises the subcutaneous injection of **Atropine**; $\frac{1}{100}$th gr. or more may be used. It improves the pulse, and assists in diminishing the vomiting and purging. In some cases it may be advisable to keep the infant continuously under the influence of atropine. Morphia should not be added to the injections.

**Opium** in some form (preferably tinctura camphoræ co.) is recommended by W. Moss[12] if there is much pain or tenesmus, and if the stools are very frequent. It should not be given where there are

cerebral symptoms present, associated with offensive stools. In cases of cholera infantum it may be given with minute doses of **Calomel** in the formula suggested by W. B. Stewart[13] (calomel, gr. $\frac{1}{10}$; pulv. ipecac. co., gr. $\frac{1}{10}$; bismuth subgallat., gr. j), every half-hour or hour. In these very acute cases, and also in the less severe condition, ileocolitis, Waugh[14] has had great success with the **Sulphocarbolate of Zinc.** The bowels should first be cleared, either with some drug, such as castor oil, calomel, or mercury, or by irrigation from below. Then administer the zinc sulphocarbolate in doses of $\frac{1}{6}$ to 2 grs. every hour; the larger dose was used several times for children in their second year, without causing gastric irritation. If the stomach is very irritable, the zinc is best administered as a dry powder with bismuth and pepsin. The zinc salt has also been found useful for stomach-washing and for intestinal irrigation, in the proportion of 1 gr. to the ounce. When there is evidently severe affection of the lower part of the bowel, **Silver Nitrate,** 2 grs. to the pint, may sometimes be used advantageously for washing out the bowel.

*Constipation.*—In infants at the breast this may be due to some fault in the mother's milk; for instance, the milk may contain too little fat or too much proteid; but, as W. J. Fenton[15] points out, this must not hastily be taken as sufficient reason for weaning; the fault may be in the infant, who, according to Fenton, may have "an hereditary predisposition to constipation." In hand-fed infants, over-feeding is a common cause, and the food is often deficient in fat. Too early use of starchy foods is also a factor. Amongst other causes are mentioned rickets, general depression from any cause, want of fresh air, anæmia, and the habitual use of enemata. Infants with chronic constipation often "do not get on"; they are peevish, sleep badly, and have more or less abdominal pain due to colic; there may be some pyrexia, and occasionally general convulsions may result. Fenton advises that in the case of sucklings the mother's health should receive special care, and that the infant should be fed regularly, so that its digestion may be as perfect as possible.

In the way of drugs he recommends for the suckling either **Fluid Magnesia,** or a few grains of **Carbonate of Magnesia, Manna,** or an occasional dose of **Castor Oil**; a glycerin or soap **Suppository** may be used if rectal administration seems preferable. For hand-fed infants he advises **Manna,** ℥j, dissolved in hot water, or a few grains of **Sodium Phosphate,** which may be added to the milk. **Sulphur,** gr. $\frac{1}{2}$ to 1, rubbed up with milk, is also a simple remedy. Where constipation is obstinate and the motions are white and hard, Fenton recommends preliminary purging with **Calomel,** followed by **Magnesium Sulphate,** and then administration of **Tincture of Podophyllin.** He says that **Enemata,** or soap or glycerin **Suppositories,** are useful when moderate doses of medicine by the mouth have produced no effect, or if it is necessary to get the bowels open quickly; but that they should not be continued

long, owing to the tendency to catarrh and dilatation of the rectum which they produce. He quotes also a formula recommended by Eustace Smith :—

℞ Infus. Senna ℥xx | Infus. Gent. co. ℥x

A teaspoonful to be given for a dose.

**Euonymin,** syrup of **Senna,** or **Cascara,** are sometimes useful.

A new drug, which is said by Ebstein[16] to have an action midway between laxative and purgative, and to be suitable for children as well as for adults, is **Exodin;** it works in from eight to twelve hours, and is said not to lose its effect with repetition.

*Vomiting in Infants* is most often associated with some intestinal disturbance, so that there is either diarrhœa or some abnormal character of the stools. Of the acute cases of vomiting, perhaps some of the most severe are seen in association with summer diarrhœa ; but there are other cases in which vomiting is a chronic condition, and may not be associated with any abnormality of the stools. Dévé and Podevin[17] report the case of an infant, aged two and a half months, who from the third day after birth vomited persistently after each feed. It was suckled by the mother for five weeks, but continued vomiting ; the bowels were regular, and the stools natural. Asses' milk was tried without improvement, and it was only by the use of **Rectal Injections** that the infant was saved from fatal exhaustion. They consider this to be an unusual case of gastric disturbance without any gross abnormality, such as pyloric stenosis.

The treatment of cases of severe vomiting, with diarrhœa, according to Lowenburg[18], is most effectively carried out by starving the infant for twenty-four to forty-eight hours, only small quantities of *sterile water* being given from time to time ; if the infant is too feeble to allow of this method of treatment, it should be fed with nutrient enemata only, for forty-eight hours. T. D. Parke[19] found that infants could be kept even longer periods than this without food ; in one case an infant, aged ten months, was kept five days on water alone, and in some cases undoubtedly the prolonged **Withdrawal of all Food by Mouth** is of great value in severe vomiting. He insists also on the advisability of stopping breast-feeding temporarily, just as one would stop artificial food, in these cases of vomiting.

Lowenburg (*loc. cit.*) states that there is nothing which has such a controlling influence over severe vomiting in infants as **Lavage,** *i.e.*, stomach-washing. For this purpose Caillé advises[20] that a No. 12 or No. 14 catheter should be used, and this he would fix on to a glass T-cannula which has a waste-tube at the other end, whilst to the third arm of the cannula a syringe is connected. It seems simpler, however, to use the simple catheter and glass funnel. The child is to be held upright on the nurse's lap, with the head secured in a forward position to allow saliva and vomited matter to escape by the mouth. The

fluid which he recommends is boiled water at the body temperature, and in some cases a solution of sodium bicarbonate, ʒj to the pint, may be used with advantage. An alternative method of washing the stomach is suggested by the same writer, namely, to encourage the infant to swallow warm water in the ordinary way, and then to induce vomiting by pushing one's finger into the back of the pharynx.

The value of **Nasal Feeding** in some cases of habitual vomiting in infancy is not generally recognized. H. T. Hicks (*loc. cit.*) says that in some obstinate cases, where all attempts at feeding by the mouth are useless, the food is retained when introduced by the nasal tube. In some of these cases also he has found **Malt Soup** a valuable food. The preparation of this food is as follows: 13 drachms of wheat flour are well mixed up with 12 ounces of fresh cow's milk, and the mixture is passed through a hair sieve; in another vessel 3 ounces 2 drachms of extract of malt are dissolved in 24 ounces of water at 122° F., and to this are added 2½ drachms of an 11 per cent solution of potassium bicarbonate. The two preparations are then mixed, and boiled up quickly. When vomiting is associated with colic, R. Hutchison[21] recommends the use of **Peptonized Milk**, which he says is often successful when all other foods have failed. Oppler[22] finds that **Coagulated Milk**, *i.e.*, milk which has been curdled by the addition of a rennet ferment, and then vigorously shaken so that the curd is finely divided, is particularly useful in cases of chronic vomiting.

References.—[1]*Amer. Med.* May 7, 1904; [2]*Med. News.* Jan. 9, 1904; [3]*Rev. d. Mal. de l'Enf.*; *Gaz. d. Hôp.* Dec. 1903; [4]*Med. Rec.* July 23, 1904; [5]*Progrès Méd.* Oct. 24, 1903; [6]*Arch. Ped.* Feb. 1904; [7]*Ibid*; [8]*Lancet*, Aug. 15, 1903; [9]*Arch. de Gén. Obst. y. Ped.*; *Arch. Ped.* April, 1904; [10]*Deut. Aerzte Ztg.*; *Brit. Jour. Chil. Dis.* July, 1904; [11]*Arch. Ped.* Oct. 1903; [12]*Med. Age*, Oct. 10, 1903; [13]*New York Med. Jour.* see *Pract.* Jan. 1902; [14]*Med. Rec.* July 25, 1903; [15]*Edin. Med. Jour.* Aug. 1903; [16]*Deut. Med. Woch.*; *Pediatr.* Mar. 1904; [17]*Ann. de Méd. et Chir. Inf.* July 1, 1904; [18]*Ther. Gaz.* Aug. 15, 1904; [19]*Med. Rec.* Aug. 29, 1903; [20]*Post-Grad.* Dec. 1903; [21]*Lancet*, Sept. 19, 1903; [22]*Monats. f. Kinderh.*; *Arch. Ped.* April, 1904.

**GLANDERS (In the Human Subject).** *Priestley Leech, M.D., F.R.C.S.*

Clark Stewart[1] reports an interesting case of pyæmic glanders in the human subject, in the person of one of the assistant bacteriologists of the Minnesota Board of Health. The infection was got from two young men, who both died from most virulent pyæmic glanders caught by contact with diseased horses. Both cases began with symptoms resembling typhoid fever, rapidly passing into those of sepsis. Both died on the seventeenth day, with multiple abscesses in the skin and subcutaneous tissue, the skin lesions being so numerous as to excite the suspicion of small-pox.

The incubation period in Dr. McD., who recovered, was six days, reckoning from the only known chance of infection, from having made an autopsy upon an inoculated guinea-pig, and having at that time a small open wound in her hand. In this case there were no lesions of the skin and mucous membranes, which are so common in most

cases of glanders, and there was limitation of the original foci to the voluntary muscles. An attempt was made to dissect out the foci in the muscles, and to prevent inoculation by the bacillus mallei; the wounds made were filled with 95 per cent carbolic acid and alcohol, before pus was allowed to flow over them.

REFERENCE.—[1]*Ann. Surg.* July, 1904.

**GLANDULAR FEVER.** *E. W. Goodall, M.D.*

Byers[1] describes an outbreak of this affection occurring in Belfast and its neighbourhood during the end of 1903 and beginning of 1904. Thirty-three cases came under his observation, all of them being under sixteen years of age with two exceptions (two patients aged twenty-one and twenty-five respectively). The disease attacked more than one member of a family at a time, and appeared to be infectious. The incubation period was from five to seven days. The onset was sudden. The usual initial symptoms were slight sore throat, fever, and pain and tenderness on one side of the neck, followed within twelve hours by swelling of the lymph glands beneath and in front of the sterno-mastoid muscle. In some cases, however, the enlargement of the glands was the first symptom; while in the most severe attacks there was initial headache, with vomiting and abdominal pain. In none of the cases was there any inflammation of the fauces. In no instance did the glands suppurate, and most of the patients were convalescent within a week. There were no fatal cases, and no complications. The pathology of the disease is at present unknown.

REFERENCE.—[1]*Lancet*, Jan. 9, 1904.

**GOITRE.** *Robt. Hutchison, M.D.*

An interesting correspondence has taken place in the *Lancet*[1] on the treatment of simple goitre, by the use of **Distilled or Aerated Water.** The correspondence was started by Dr. Payne, who described three cases of simple goitre, in all of which great improvement had resulted from drinking distilled water. In each case the goitre was of long standing, and in two of them various other methods of treatment had been tried without success.

Louis E. Stevenson pointed out that this method of treatment was not really new, for St. Lager had recorded many cases of goitre cured by the drinking of distilled water. He considers that the hardness or otherwise of a water has nothing to do with its power of producing goitre, but that the two theories most in vogue at present are (1) The bacillary theory; (2) The metallic salts theory of St. Lager; the salts chiefly involved being the sulphides of iron and copper. He is of opinion that there is much to be said in favour of the latter view.

Wilson stated that for the last seven years he had directed patients with goitre to drink distilled water or boiled rain-water. During that period he had treated about a dozen cases, but he could not say that all had been successful. He was of opinion that distilled water is a

valuable adjunct in the treatment of goitre, but not in itself a specific. At all events, such a simple method of treatment seems deserving of further trial.

Dubar[2] reports two cases of simple goitre in young girls, which he has treated by **Injections** of oil containing 40 per cent of **Iodine.** About fifteen drops were injected, at intervals of a week, into different parts of the gland. In no case was there any unpleasant reaction, but two or three of the injections were followed by the appearance of a small, firm node, showing no signs of inflammation ; these eventually disappeared. In one patient, after nine injections the size of the goitre was diminished by three-fourths of an inch. In the other, six injections resulted in a diminution of nearly one inch, and a series of four more injections caused a total shrinkage of nearly an inch and a half.

REFERENCES.—[1]*Lancet*, July, Aug. 1903 ; [2]*Progrès Méd.* No. 4, 1904.

**GOITRE, (Exophthalmic).** *Prof. A. H. Carter, M.D., F.R.C.P.*

Grocco[1] points out, with regard to the cardiac symptoms in this disease, that dilatation is always present in some degree, and may be brought on by slight causes, such as climbing stairs, or lifting a weight. Such exertion does not cause dilatation in simple neurotic palpitation. Dilatation is in close relation to the amount of general asthenia, but not necessarily to the tachycardia. There may be marked rapid changes in the sounds and shape of the heart, and in many cases the aorta is dilated, but they are not necessarily permanent. Similar symptoms may be met with in other forms of cardiac disease ; but, apart from exophthalmos and thyroid enlargement (which are rarely absent) in Basedow's disease tachycardia predominates, and the patient almost always presents an aspect of terror, with agitation, and mental depression. Angina pectoris may be simulated, but never occurs in a true typical form. Chronic myocarditis also should be carefully distinguished from Basedow's disease, since the prognosis is much more serious ; but the rapid fluctuations in the cardiac symptoms, and dilatation of the aorta, are absent in the former.

TREATMENT.—Lloyd Roberts[2] recommends **Didymin** (testicular extract) in obstinate cases of this nature. He has used it in several cases with striking benefit. He gives it in tabloid form, beginning with 10-gr. doses *per diem*, gradually increasing to 20 gr.

REFERENCES.—[1]*Brit. Med. Jour.* Feb. 27, 1904 ; [2]*Ibid.* Jan. 2, 1904.

*Priestley Leech, M.D., F.R.C.S.*

Deaver[1] records a case of this disease which was cured by **Bi-lateral Cervical Sympathectomy.** His conclusions are : Removal of both cervical sympathetic nerves, with the three ganglia, is the operation of choice in this disease ; the results are better than those of other procedures, the mortality is much lower, and in cured cases, the improvement is permanent. He also recommends the operation in chronic glaucoma, and in recurring attacks of epilepsy.

Farquhar Curtis[2] concludes that exophthalmic goitre can be cured both by **Thyroidectomy** and by **Sympathectomy**; a perfect result can be expected in about 60 per cent of the cases of thyroidectomy. An immediately good result appears to be the rule in sympathectomy. Sufficient time has not elapsed to judge of the permanence of the cure, but the immediate results of sympathectomy are far superior to those of thyroidectomy. The relative mortality of the two operations would also seem to favour sympathectomy (Kocher, 4 deaths in 59 cases of thyroidectomy or ligature only; Jonnesco, none in 14 bi-lateral sympathectomies); in Curtis's own cases the proportion is the opposite. There is serious danger of fatal acute thyroidism after both operations.

*Technique.*—It appears wiser to use local cocaine anæsthesia for thyroidectomy, and to give it a trial also in sympathectomy. Sympathectomy should be performed upon only one side at a time, with an interval between the operations sufficiently long to permit the patient to recover from the effect of the first operation. Crushing of the isthmus, ligation *en masse* with catgut, and division with the cautery were all given a trial, with the idea that it might affect the occurrence of thyroid poisoning; but it followed all methods. The only possible warning of the possibility of acute thyroidism which he has been able to discover, lies in the condition of the kidneys; in all of his five fatal cases a trace of albumin, or even a considerable quantity, with granular casts, was found in the urine after operation; but in only two of them was albumin found in the examinations made before operation.

Riedel[3] describes his method of operating for goitre under local anæsthesia; he recommends this particularly in exophthalmic goitre.

References.—[1]*Ann. Surg.* Aug. 1903; [2]*Ibid,* Mar. 1904; [3]*Berl. klin. Woch.* Mar. 16, 1903; *Brit. Med. Jour.* Mar. 19, 1904.

**GONORRHŒA.** *J. W. Thomson Walker, M.B., F.R.C.S*

Pathology.—In a paper on the etiological relationship between gonorrhœa and hypertrophy of the prostate, Rothschild[1] discusses the evidence which has been adduced in support of this relationship, and adds some observations of his own. Gonorrhœa can only be related to prostatic hypertrophy through the prostatic inflammation it causes. The acute forms of prostatitis do not come directly into this connection, and he deals only with the chronic forms of prostatitis. In recent years the frequency of chronic prostatitis has been recognized. Prostatitis is said by Caspar to occur in 85 per cent, and by Frank in 100 per cent of cases of gonorrhœa; and Josef has stated that from 70 to 90 per cent of males suffer from gonorrhœa. Prostatitis may also result from other causes, such as bicycling, infection from instruments, and any inflammation of the bladder.

Finger found histological evidence of chronic prostatitis in 31 of 120 *post-mortems*, and Rothschild found similar proof in 27 out of 30 cases.

Ciechanowski states that the so-called hypertrophy of the prostate and certain forms of atrophy of the prostate have a common origin in chronic inflammation of the stroma, and depend upon the localization and distribution of the changes. When the changes take place in the neighbourhood of the gland ducts, the lumen of these is narrowed or closed, the prostatic secretion collects, and the tubules become dilated. The dilatation of the gland tubules takes place more quickly, and is greater, the more numerous the obstructions, the nearer they are to the duct openings, and the more marked the degree of the accompanying catarrhal process. On the other hand, if the changes in the stroma are situated near the periphery of the organ, the tubules are compressed and atrophy of the entire organ results.

With these observations the investigation of Rothschild was in agreement. He does not however attribute to gonorrhœa the entire causation of prostatic enlargement, since chronic prostatitis may be caused by other diseases, and, moreover, the process described above does not cover all forms of prostatic enlargement. He thinks it possible that in the future, prostatic hypertrophy may be less common than it is at present, since for some years energetic treatment of chronic prostatitis has been undertaken.

Heller[2] records a case of gonorrhœal phlebitis, and after a careful search in the literature could only find 25 similar cases. Varicose veins were not present in his case. The phlebitis affected the lesser saphenous veins and the pampiniform plexus. In reviewing the cases, the author found that the saphenous veins were most frequently affected, and that the average duration of the disease was six weeks. The prognosis was usually good, although fatal cases had occurred.

Jurgens records a case of gonorrhœal stomatitis. An acute diffuse inflammation of the mucous membrane of the gums and cheeks commenced shortly after the appearance of a gonorrhœal urethritis. A dirty grey membrane covered the inflamed mucous membrane, and when wiped away ulceration was found underneath this. The gonococcus was found in smear preparations, and cultures obtained.

In a bacteriological investigation of 33 cases of acute conjunctivitis in new-born children, Zabel[3] found gonococci in 19 cases. On comparing his results with those of other observers, he found that they agreed; 550 cases were compiled from the publications of ten observers, and in these, the pus was free from gonococci in 37 per cent. The impression that the gonorrhœal cases were severe and the non-gonorrhœal cases mild, was incorrect. Among the 14 cases in which no gonococci were found, 6 were complicated by severe corneal inflammation. The author concludes that cases of gonorrhœal conjunctivitis resemble in all points those caused by other bacteria, and cannot be distinguished from them unless the diplococcus of Neisser is found.

Treatment.—C. F. Marshall[4] quotes the following important points

in regard to the **Injection Treatment** of gonorrhœa from a recent article by Vajda of Vienna.

1. Urethral injections, performed in the usual way, with few exceptions, reach the membranous and prostatic urethra.

2. The injected fluid not only passes along the central part of the urethra, but also reaches the folds of mucous membrane. This was proved by touching the folds of the urethra and the orifices of the ejaculatory ducts with a solution of perchloride of iron, and then making an injection of 1 per cent ferrocyanide of potassium. Prussian blue was formed by the combination, and the parts reached by the injection accurately observed.

3. Particles suspended in the injection are carried wherever the injected fluid goes. This disposes of the statement that suspended particles in an emulsion are filtered as they pass along the urethra. By suspending particles of talc in an injection of sodium gallate, and then inspecting the canal with the urethroscope, the particles were found in the prostatic and membranous urethra.

4. The obstruction to the injected fluid is caused by the unstriped muscle of the urethra and the tonus of the striped muscle of the membranous and prostatic urethra, the greatest obstruction being in the penile and bulbous urethra.

5. The obstruction in the diseased urethra is not much greater than in the normal urethra.

6. To relieve spasm, the injection should be warmed. The pressure should not be more than 2 metres of water pressure. In using a syringe, the injection should be made slowly and with uniform pressure.

7. About 3 drachms of fluid are sufficient to reach the prostatic urethra.

8. The injection should be stopped when spasm occurs, as the urethroscope shows that at this time the fluid begins to enter the prostatic urethra.

Marshall recommends **Protargol** as being the best of the recent albumin compounds of silver, and uses it as a 1 per cent solu ion till the discharge becomes clear. Astringents should follow this to complete the cure. Of these he recommends **Chloride of Zinc** or **Acetate of Zinc**, 1 or 2 grs. to the ounce. He gives the following description of the Janet method of irrigation: "The apparatus consists of a glass vessel holding 1 to 2 litres, connected with which is a rubber tube, ending in a short glass cannula, long enough to close the meatus. The glass vessel is raised or lowered according to the pressure required. The anterior urethra is first irrigated from a height of 20 inches, the fluid being controlled by pressure on the urethra with the fingers. Then the middle part of the urethra is treated, the vessel being raised about 3 feet. Lastly, the posterior urethra and bladder are irrigated from a height of about 4 feet. The patient is taught to relax the sphincter vesicæ muscle by

attempting to urinate, thereby allowing the fluid to enter the bladder. Janet uses **Permanganate of Potash,** 1–2000 for the first irrigation ; 1–5000 for the next, five hours later; then 1–1000 in another five hours ; and 1–2000, twelve hours after this. The last is repeated every twelve hours for five days. At the end of this time it is claimed that the gonococci have disappeared and the patient is cured. The so-called abortive treatment consists in beginning this method at the earliest stage of the disease, *viz.*, when there is swelling and eversion of the mucous membrane at the meatus. Hot saline solutions have also been used by this method."

In discussing the abortive treatment, Dr. Marshall casts doubt on the successes claimed by Janet and others. Abortive treatment might be effectual a few hours after contagion, when there is simply swelling of the meatus and no discharge, but it cannot be certain, at this stage, that gonorrhœa is present, as a slight anterior urethritis with swelling at the meatus may be contracted, which will subside by itself, or with simple astringents. In regard to the finding of the gonococcus as a proof of gonorrhœa at this stage, he says : " I do not believe that we know enough about the gonococcus to say that it is always the cause of gonorrhœa." He believes that the use of the urethroscope in chronic gonorrhœa and gleet is overdone. " It is of value in certain cases, but when used as a routine method it is apt to do more harm than good, by pushing back the discharge into the membranous urethra."

[To anyone accustomed to the use of the urethroscope this criticism will come as a surprise. The urethroscope tube should not, and one believes could not, be used of such a calibre as to act as a tightly-fitting piston rod to drive discharge back into the posterior urethra. The question naturally suggests itself whether the urethroscope tube under the guidance of the surgeon, or a fluid injection in the hands of the patient, is more likely to sweep discharges back into the posterior urethra. With the wisdom of avoiding the urethroscope in acute gonorrhœa, most urethroscopists will, however, concur.—Ed.]

Rucker[5] irrigates the urethra with **Permanganate Solution** and then packs the canal with cotton cord saturated in **Ichthyol, Resorcin,** and **Balsam of Peru,** through a tube by means of a glass rod. The packing is repeated once a day, and later once in two days.

Loux[6] summarizes his conclusions in regard to the treatment of gonorrhœa as follows : (1) Acute anterior urethritis should not be treated by means of irrigation, because of the danger of spreading the disease to the posterior urethra ; (2) Irritating injections of any kind should never be used in acute gonorrhœa, because of the certainty of the recurrence of a mixed infection, and the extension of the disease by contiguity, to the urethral follicles ; (3) **Argyrol,** as a non-irritating gonococcide, with a specific effect in allaying the symptoms of inflammation, is the drug of choice for injection, and may be used in any strength and at any stage of the disease · (4) **Astringents,** such as zinc,

hydrastin, bismuth, and lead, should never be used in the acute stage of gonorrhœa, but should be reserved for the post-gonococcus period, when the urine remains shreddy ; (5) These astringents should not be used in sufficient strength to cause pain or irritation.

J. S. Purdy[7] contrasts the treatment of gonorrhœa without and with local measures. Of general treatment alone, he says : "Though cases remained free from obvious discharge for three weeks, the persistence of flocculi in the urine, together with the frequency of relapses, showed that to secure the best results in this condition something more was required than mere medicinal treatment." In discussing the different forms of injection, he advocated the use of argyrol as being an efficient gonococcide and at the same time being non-irritating. The drug was least successful in chronic cases.

F. Re[8] recommends **Picric Acid** as an injection in gonorrhœa. In acute cases a solution of ½ per cent in equal parts of distilled water and glycerin was injected four times daily by means of a hard rubber syringe. In two cases, however, a severe itching and burning in the urethra, and œdema of the glans, together with painful and bloody micturition, followed the injection of a 1 per cent solution. These symptoms disappeared, and a ½ per cent solution was afterwards used with impunity. The solution should therefore be very gradually increased in strength from ½ to 2 per cent. In chronic cases the 2 per cent solution may be used at once. The author has also injected an ointment of 1 or 2 per cent picric acid in equal parts of vaseline and lanolin.

Edmund Saalfeld[9] recommends the internal administration of **Gonosan** in capsules. This is a preparation of the resin of kava-kava and sandal wood oil ; he believes that the drug is of special value where local treatment cannot be adopted.

Scharff[10] has treated 30 cases with **Urosanol,** a combination of protargol and gelatine. This is liquefied at the body temperature, and is supplied in small tubes. Strengths of from 3 to 5 per cent were used, and the quantity injected was 2½ cc.

References.—[1]*Centr. d. Harn u. Sex. Org.* Bd. xv. Hft. 4 ; [2]*Berl. klin. Woch.* June 13, 1904 ; *Med. Rec.* July 9, 1904 ; [3]*Inaug. Diss. Halle,* 1903 ; *Centr. des Harn u. Sex. Org.* Bd. xv. Hft. 1 ; [4]*Treatment,* Feb. 1904 ; [5]*Amer. Med.* May 14, 1904 ; [6]*Can. Lancet,* June, 1904 ; [7]*Lancet,* Dec. 19, 1903 ; [8]*Rif. Med.* April 29, 1903 ; [9]*Ther. Monats.* No. 12, 1903 ; [10]*Ibid,* July, 1903 ; *Treatment,* Dec. 1903.

## GOUT.

*Robt. Hutchison, M.D.*

Pathology.—The most conflicting views still continue to be expressed regarding the essential nature of gout. Chalmers Watson[1] has recently attempted to throw light upon the subject by an investigation of gout as it occurs in the fowl. He holds that there is ample evidence to prove that the uric acid in the blood is not the primary factor in gout, and that it can be deposited in the tissues without exciting any inflammatory reaction. He is apparently of opinion that

the toxic agent which excites the inflammation is of bacterial origin, but for the evidence upon which he bases this opinion the reader is referred to the original paper.

Pfeil[2] records a number of observations on the excretion of uric acid under various diets in normal individuals, and in two subsequent papers Soetbeer compares with these normal figures those which he obtained from the study of gouty patients. It is known that the administration of nucleic acid, which usually is followed by an increased secretion of uric acid, does not produce the same effect in the gouty. In agreement with this, Soetbeer found that during an acute attack, feeding with flesh was followed by no rise of uric acid in the urine. In chronic gout, at a time when there were no attacks, the addition of meat to the diet was followed by the usual rise in uric acid, but the excretion of that substance was irregular. Analysis of the total acids and bases in the urine were made; the ammonia and the potassium were found to be diminished in quantity; a comparison of the total acid and the total bases in one gouty and two healthy individuals showed also the higher acidity of the gouty urine.

Futcher[3], in a study of metabolism in a case of gout, found that there was a close parallelism between the excretion of uric acid and phosphoric acid in that disease. He regards both as products of nuclein disintegration. In the quiescent intervals both uric and phosphoric acid are below normal, but they increase shortly after the acute joint symptoms begin until they reach the normal average, subsiding again after the acute attack is over.

Woods Hutchinson[4], in an article on the meaning of uric acid and the urates, asks whether uric acid, with its congeners or precedents, is the cause of gout and the lithæmic state, or merely a symptom? On the one hand, he says, we find the bulk of English and American observers; and on the other hand the mass of the continental, headed by Levison and Ebstein. On the face of it, the former theory appears far the more probable, for we have apparently naked-eye proof of its correctness, in the form of visible deposits of the urates of sodium, forming the tophi, and acting as apparent irritants in the inflamed joints; while the acute attack is usually accompanied by a great increase in the excretion of urates, and its decline by a corresponding diminution. Garrod and many observers declare that the amount of uric acid in the blood itself of gouty patients is markedly increased, while Haig furnishes us with a graphic picture of solid crystals of uric acid, crystallizing out of the blood-stream in the sheaths of the nerves, in the parenchyma of the kidney, in the mucous membrane of the nose and throat, the tissue of the nostrils, and every other region which furnishes an ache in gout, giving rise to chronic neuralgia, nephritis, rhinitis, and tonsillitis of gouty subjects. But the value of this evidence has been greatly undermined of late years. In the first place, very serious doubt has been thrown upon the power of uric acid as such, or

even of the urates, to give rise to serious irritation in the tissues. It is alleged to be almost absolutely non-irritating, as much so as its relative urea; in support of which might be advanced the fact of its occurrence in large amounts in some of the leukæmic conditions without giving rise to any irritation whatever. The same is true in children, in whom it may be present in perfect showers in the urine without giving rise to any symptoms, except the renal or vesical irritation due to its mechanical effects. It has also been injected in large amounts into the bodies of animals, as well as administered in their food, with no toxic results whatever, or more than purely local irritation. His own conclusions are as follows :—

1. There is no connection whatever between the production of urea and of uric acid; hence interdiction and marked limitation of animal or of nitrogenous foods, as such, in gout is irrational.

2. The uric acid produced in health comes exclusively from two sources; the larger moiety, or exogenous uric acid of Chittenden, from the nucleins and purin bases of the food; the smaller, or endogenous moiety, from the destructive metabolism of the nucleins of the body tissues.

3. It is the endogenous moiety alone which is increased in gout and lithæmia.

4. Gout and lithæmia are mere symptom names for a miscellaneous group of chronic toxæmic processes of widely-varied origin, characterized by the production of uric acid and the urates.

5. By "gouty diathesis" we mean the possession of a sufficient degree of resisting power on the part of the protective cells of the body to oppose the entrance of any poison, whatever its character or source, with consequent destructive metabolism and production of uric acid, but not adequate to neutralize or successfully prevent its absorption.

6. The uric acid of gout, like the phosphoric acid which invariably accompanies it, is merely a result and measure of the destructive metabolism of the nucleins of the body cells, chiefly, probably, of the leucocytes, in response to the invasion of poisons or toxins, either organic or inorganic.

7. Hence the use of lithia or other "solvent" agents is irrational, and any benefits resulting are to be explained on other grounds.

8. As most of the toxins setting up this destructive metabolism and consequent uric-acid production are of intestinal origin, diet in gout should be regulated solely with regard to the diminution of intestinal fermentation and putrefaction.

9. As animal foods, from their much more appetizing and attractive flavours, are apt to be indulged in in excess of the oxidative powers of the body, their limitation may be found to be more frequently necessary than that of vegetable foods, but sugars and starches are also very often at fault.

10. As uric acid and the alloxur group are not toxic, or at best feebly

so, and are not the cause of gout, the prohibition of foods even rich in nucleins and purin bases, such as red meats, roe, and sweetbreads, has no rational basis, and is clinically of doubtful utility except by diminishing the attractiveness of the dietary.

11. The rôle of the liver in gout is a negative one, being inability to perform its chief normal function as a "poison filter," and to absorb or transform into harmless excretory substances the excess of toxins brought to it by the portal vein.

12. The drugs found of value in gout owe their efficacy chiefly to their power of checking intestinal putrefaction, or of preventing the absorption, or promoting the elimination, of its products.

Treatment.—Falkenstein[5] finds that there is only one fact in regard to the pathology of gout on which all observers are agreed, namely, that there is an excessive quantity of uric acid in the organism. It is still impossible to prove whether there is an excessive production, or a diminished destruction, or a lessened excretion of the acid, and whether the condition is due to a primary kidney lesion, or to a lesion in the liver, or to a neurosis. The author points out that clinically a peculiar form of dyspepsia is found to be present in gout cases. This has long been recognized. In order to make himself clearly understood, he briefly describes the function of the gastric glands. Beside the glands, which secrete pepsin, certain cells in the fundus of the stomach have the capability of secreting hydrochloric acid. It is only when the gastric juice is acid that pepsin is able to dissolve insoluble or coagulated albumin. The pepsin is not used up, while the acid is, so that if one adds fresh acid to the gastric juice, additional quantities of fibrin can be digested, without any further replacing of pepsin. When the acid-secreting cells are diseased, not only will the digestion be insufficient, but the substances from which the hydrochloric acid is derived in the blood will lead to pathological conditions in the body. One regards a gouty person as a person who abuses the pleasures of the table; but in reality, he is incapable of digesting the ordinary food stuffs. His gastric glands are diseased. Excess of food is negotiated in healthy subjects by increased supplies of hydrochloric acid, and the products are oxidized to urea; but in the gouty there is abnormal fermentation, insufficient oxidation, and the substances containing quantities of nuclein are partly prevented from being further split up, and partly favour the synthetic formation of uric acid. In this way the faulty secretion of the gastric glands leads to an excessive formation of uric acid. The gastric juice, however, is frequently hyperacid, but this is due to organic acids, such as butyric, lactic, and acetic acids.

Basing his treatment on these ideas, Falkenstein tried on himself, as well as a number of patients, the following: he gives from 40 to 60 drops of pure **Hydrochloric Acid** in a large quantity of effervescing water each day. The water is drunk during the meals, and the quantity is arranged so that the patient is struck by the acid taste. The

diet is then an ordinary one. The dyspeptic symptoms disappeared, and the attacks of gout became less frequent and much less severe. Pfeiffer's experiments with injecting uric acid appear to have led to the same results. Uric acid dissolved in salt solution injected hypodermically, always led to an attack of gout, but when the patient was given 5 to 8 cc. of hydrochloric acid in water, no attack took place. He discusses at some length the *rationale* of his treatment. In discussing the older methods of treating gout, he praises the action of **Morphine** as not only relieving the pain, but by favouring perspiration, acting directly curatively on the gout. The "pyrins," and especially **Aspirin,** are also of value. Of colchicum he says that he is convinced that it does much harm. It may shorten an attack and lessen the pain; but inasmuch as it interferes with the excretion of uric acid, it acts by producing a condition of *status quo ante*, and is therefore likely to lead to a rapid return of the symptoms.

REFERENCES.—[1]*Brit. Med. Jour.* Jan. 9, 1904; [2]*Zeits. f. Phys. Chemie,* Dec. 1903 (Abst. in *Brit. Med. Jour.* Jan. 16, 1904); [3]*Pract.* Aug. 1903; [4]*Med. Rec.* Oct. 10, 1903; [5]*Berl. klin. Woch.* Jan. 18, 1904; *Brit. Med. Jour.* Mar. 19, 1904.

**HALLUX RIGIDUS.** *Priestley Leech, M.D., F.R.C.S.*

Cotterill[1], in a communication on the causes of this condition, suggests that osteo-arthritis of the first metatarso-phalangeal joint only accounts for a small percentage of the cases. It may arise from trauma, rheumatism, gout, ill-fitting boots, etc., but in the majority of cases it is primarily due to flat-foot. In order for the condition of "hallux rigidus" to be produced, the flat-footed person must be in the habit of wearing boots which prevent the great toe rising to its normal angle of relation to its metatarsal bone, when the base of that bone falls into its abnormal position in flat-foot. Unless boots are worn, hallux rigidus will not be produced, as is seen in negroes, or children who have never worn boots. The stiffness is in many cases reflex in character, and is due to muscular spasm, the result of joint irritation; in more advanced cases the ligamentous and other structures of the joint are altered in such a way as to cause permanent stiffness, which will not disappear under an anæsthetic. In early cases attention to the **Flat-foot, Passive Movements,** and **Massage,** will effect a cure. In later cases **Excision** of the head of the metatarsal bone is the best treatment. If operation is refused, a stiff **Metal Sole,** as suggested by Professor Chiene, is useful, but the stiffness and ungainly walk are not altered.

REFERENCE.—[1]*Brit. Med. Jour.* Nov. 28, 1903.

**HAY FEVER.** *P. Watson Williams, M.D.*

TREATMENT.—We have already alluded, in our previous issue, to the antitoxin serum treatment suggested by Professor Dunbar, citing at the same time the few observations by other investigators then published. The prevalence of this troublesome complaint demands full trial

of any method which is likely to be successful. We therefore refer to various reports that have been made on the use of **Pollantin**. Semon[1] has directed attention to the necessity of frequent use of the remedy daily during the hay fever season, if full benefits are to be expected; Lübbert and Prausnitz[2] having attributed lack of success to the fact that the serum was not used nearly frequently enough. They recommend that the remedy, in its fluid form for the eyes and in its new powdered form for the nose, should be used regularly as a prophylactic measure, the first application to be made immediately after waking, and further ones, particularly when the patient has been in the open air, as soon as the least irritation is felt. The frequency of the applications will thus of course vary considerably in every individual case; but it is obvious from their statements, as well as from Semon's own experiences of last year, that so long as the applications be made to the eyes and nose only, and no subcutaneous injections be resorted to, the remedy is perfectly harmless. They further insist that no serum bottle ought to be used longer than one week at the utmost.

M'Bride[3] having made a few experimental investigations, concludes by stating that "looking at Professor Dunbar's researches, in conjunction with the experiments of Sir Felix Semon and myself, it seems quite certain that he has been able to isolate a toxin, and further, that he has also been able to provide an antitoxin by passing the toxin through animals, chiefly thoroughbred horses. Whether, however, we can yet be certain that the pollen of grasses and of grasses only can produce hay fever, is more doubtful . . . the clinician yet meets with instances in which this theory is hardly a conceivably satisfactory explanation." Similar experiments by Emil Mayer[4] led to almost identical conclusions as to the effect of the toxin and the antitoxin.

Repeated clinical observations are recorded by Borrowman[5] on two cases; one a patient, the other himself. The first was injected in the arm: much irritation followed, and no relief from the hay fever. Subsequently, repeated instillations of serum in the eyes gave him comparative comfort, which compared favourably with a previous solution of cocaine, 2 per cent. In his own case it is difficult to see clear evidence of much benefit.

Somers[6] from reports on ten cases concludes that: (1) The serum produces prompt and positive amelioration of the symptoms of fall hay fever in the majority of cases; (2) In a smaller number this favourable result is soon accompanied with the complete disappearance of the affection; (3) Where slight or no action is seen after its use, pollen as an etiological factor does not predominate; (4) When results are obtained, it favourably influences all the manifestations of hay fever; (5) The fluid serum appeared to be more effective than the dry powder. He used the antitoxin made from the serum of animals inoculated with the pollen toxin of golden rod.

Finally, we may refer to Lübbert and Prausnitz' collected statistics[7]

on 285 patients from different countries: showing 60 per cent completely relieved, 29 per cent partially cured, and 11 per cent of failures. The failures were believed to be due mainly to failing to comply with the directions for the use of the serum. (*See also* p. 74.)

REFERENCES.—[1]*Brit. Med. Jour.* May 14, 1904; [2]*Berl. klin. Woch.* March 14 and 21, 1904; [3]*Edin. Med. Jour.* July, 1904; [4]*New York Med. Jour.* Aug. 8, 1903; [5]*Scot. Med. and Surg. Jour.* Sept. 1903; [6]*St. Louis Med. and Surg. Jour.* May, 1904; [7]*Berl. klin. Woch.* March 21, 1904.

**HEADACHE.** (*See* VISION, DEFECTS OF.)

**HEART, (Diseases of).** *Prof. A. H. Carter, M.D., F.R.C.P.*

*Cardiac Failure.*—Dr. Morison[1] insists upon the importance of intelligent boldness in dealing with serious cases of this kind, and points out that there are four factors in cardiac action, namely, the neural, the muscular, the hæmic, and certain mechanical factors, each of which should be reviewed in dealing with a given case. Among cases of the neural type, he refers to cardiac failure from shock, for which, whatever other agents we may use, such as nitrite of amyl, atropine, or strychnine, **Artificial Respiration** is imperative. In the flaccid diastolic heart of angina, the prompt use is required of **Nitrites,** and failing these the sufficient employment of **Morphine** and **Atropine,** or these combined (if need be) with volatile anæsthetics. Again, in the tachycardia which may overtake a tolerably well compensated heart affected with valvular disease, there are two valuable remedies —**Opium** in sufficient doses, and **Ice** applied to the head, trachea, or præcordia with such continuousness as the state of the patient may permit. With regard to the muscular factors of cardiac failure, he quotes a case of valvular disease in which compensation had broken down, and had resisted all treatment by ordinary remedies. For such a case, usually occurring in youth or prime of life, he would recommend an initial **Venesection,** from 4 oz. to half a pint; anasarcous fluids should be drained by Southey's tubes or incision; fluid effusion in chest or abdomen removed by tapping; not with much expectation of these measures being successful in themselves, but to prepare the way for **Digitalis,** which should be given in 15, 20, 25, or 30-minim doses in the adult, every four hours, until 200 to 300 minims have been taken. Success is not assured, but in certain cases great relief results. When heart-failure depends upon faults in the quality, quantity, or distribution of the blood (hæmal factors) much can often be done by **Opium** (in acute carditis), **Venesection,** restriction of **Fluid Drinks,** and careful attention to posture, rest, and exercise. By the mechanical factors in cardiac failure, Dr. Morison refers to the influence of the valves. For instance, defects in the right heart alone, or cardiac failure from purely pulmonary causes, such as pneumonia and emphysema, tend to deplete the left heart. For this reason, the digitalis group should only be used with great caution, if at all, in these circumstances.

*Dilatation of the Heart.*—Dr. Colbeck[2] supplies a well-reasoned

vindication of the view that dilatation in all cases depends primarily upon diminished tonus of the cardiac muscle. He shows that the functional efficiency of the heart is regulated automatically by the muscle tonus, and that when this is absolutely or relatively diminished, the contractile energy of the organ becomes impaired, the amount of residual blood at the end of systole is increased, and conditions are established which necessarily lead to stretching and consequent dilatation of the cardiac parietes. An interesting illustration of the process is afforded by the occurrence of dilatation under the influence of nervous conditions, such as grief, anxiety, mental depression, and the like. He also points out that the beneficial action of digitalis is largely due to its property of increasing muscular tonus.

*Aortic Regurgitation.*—It is generally admitted that aortic regurgitant murmurs are less frequently misinterpreted than murmurs of any other kind ; and yet, as has not infrequently been pointed out, mistakes sometimes occur. Cabot and Locke[3] have carefully reviewed such cases, and arrive at the following conclusions :—

1. Diastolic murmurs without organic valve lesions are not uncommon in connection with dilatation of the aorta, localized or diffused.

2. When the pleura and pericardium are adherent, owing to tuberculosis or other causes, diastolic murmurs are occasionally audible in the præcordia. Such murmurs are notably affected by respiration and by position ; they are probably due, in most cases, to suction or pulsion exerted by the heart upon portions of lung adherent to the pericardium (" cardio-respiratory murmurs ").

3. In cases of intense anæmia, when the red cells are reduced to or below 1,000,000 per cmm., one occasionally hears diastolic murmurs not to be explained by permanent dilatation of the aortic ring nor as " cardio-respiratory murmurs," and not due to a diastolic accentuation of a venous hum. The cause of these murmurs is obscure.

*Xiphosternal Crunching-sound.*—Under this term Solis Cohen[4] calls attention to a peculiar abnormal sound of cardiac rhythm. It is superficial in character, and may be compared to the sound caused by a boot treading on soft snow. It is heard over the lower end and a little to the left of the sternum. The exact area varies with each case. The upper margin was between the upper border of the fifth rib and the upper border of the sixth rib, the lower from a line drawn transversely through the base of the ensiform, to one extending from the tip of the xiphoid to the junction of the seventh costal cartilage with the costal margin. The right border in every case lay between the right and left edges of the sternum. The left boundary was between the left mid-clavicular line and a line drawn an inch and a half to the left of the sternum and parallel with it. The sound was heard during the whole of the cardiac systole, but not during diastole. It varied in intensity, and occasionally slightly in position, but never in character. It was not influenced by exercise, respiration, or pressure with the

stethoscope, except in one instance, in which it seemed to be increased when the stethoscope was pressed against the chest, and also when the patient had walked rapidly. When the patient leaned forward, the sound became intensified (in every case but one), and when he lay down it diminished in intensity, in two cases completely disappearing In every case the heart was enlarged, and the cardiac sounds were weak and of poor quality. Retraction of the interspaces was noted in three cases. The pulse averaged about 82. He suggests that it is a friction sound, associated with "white patches" on the pericardium.

*Primary non-congenital Disease of the Right Heart.*—Under this head Dr. Syers[5] draws attention to cases of shortness of breath, and œdema of the lower limbs, in which the pulse is regular, and there is no evidence of valvular disease, nor (necessarily) any obvious bronchitis and emphysema. The urine is quite up to the average in quantity, and hardly ever contains albumen. But the left ventricle may be hypertrophied, the apex being displaced to the left, and the impulse more or less diffused. This condition, he maintains, is due to degeneration which is more or less confined to the right side of the heart, coupled, it may be, with degeneration of the pulmonary arterial system. It is necessary to point out that he does not support his views by *post-mortem* observations, in the paper referred to. The prognosis is serious, but considerable amendment is possible if early treatment is adopted. He speaks highly of a combination of **Digitalis** with **Caffeine** in such cases.

*Cardiac Syphilis.*—Recent clinical researches have established the fact that cardiac trouble of syphilitic origin is by no means uncommon, and yet there are many practitioners who, if they are aware of the occurrence at all, regard it as a pathological rarity, of little practical importance. In this connection two papers by Adler[6] and Weber[7] are well worth reading. Three groups of lesions are usually mentioned —gumma, sclero-gummatous arteritis of the coronaries, and fibrous myocarditis. The first two occur usually in the tertiary period, and are comparatively rare, but the last is by no means limited to the tertiary period, but may appear in very early stages of the disease, and is probably of much more frequent occurrence. It begins in the form of microscopic cellular proliferations in the adventitia of the smallest arterioles of the myocardium, which become the starting point of strands of a similar nature penetrating the adjacent tissue, becoming fibrous later on, and associated with destruction of muscular fibres and minute arterioles in the affected areas. It is possible by appropriate treatment to arrest this process when in an early stage, and to restore the part to its normal condition. If fibrous tissue has already been formed, its further progress may still be arrested, though the damage already inflicted is permanent: some muscle-tissue has been irrevocably destroyed, and scar-tissue has taken its place. The

prognosis turns upon the stage to which the lesions have attained, the extent of area affected, and their topographical distribution.

With regard to diagnosis, it must be first remembered that not all heart-disease which occurs in syphilitic subjects is of syphilitic origin, for they are liable to heart disease from other causes, in common with their fellows. Again, it is not claimed that the clinical manifestations of syphilitic heart-disease differ in any obvious fashion from corresponding affections brought about by other antecedents. Lastly, it may be admitted that in a certain proportion of cases a categorical diagnosis may be impossible. Yet, notwithstanding, there are numerous cases in which the diagnosis may be established with reasonable certainty or with great probability. For instance, typical attacks of angina pectoris, occurring between twenty and forty years of age, without other evidence of arteriosclerosis or contracted kidney, are probably syphilitic, and if there is proof of previous syphilitic infection, the diagnosis is almost certain. Indeed, whenever we meet with myocardial symptoms in early middle life, apart from all history of their more common causes, such as rheumatism, the possibility of syphilitic influence should always receive consideration. Again, in cases where other causes might be assigned for cardiac trouble, and there is well-established history of syphilis, or in the presence of definite evidence of present or old syphilitic lesions, it would be wise to treat the case on the assumption of its syphilitic nature.

To rely upon the **Iodides** in the treatment of syphilitic heart-disease will lead to disappointment, according to Dr. Weber's experience; temporary improvement you may get, but it will soon pass away; not so, however, if **Mercury** be used with them, provided the patient's kidneys are sound. For this purpose he is in the habit of ordering mercurial inunctions whenever practicable; when not, the bichloride of mercury hypodermically, or the biniodide by the mouth. Rosenbach's dread of iodides, because of an alleged irritation of vascular endothelium, is exaggerated and unnecessary, according to Dr. Adler.

General Therapeutics.—*Rest in Cardiac Disease.*—Dr. Chapman[8] sums up a clinical lecture on this subject as follows:—

(1) The place which **Rest** takes in the treatment of many forms and phases of heart affections is both invaluable and unique; (2) It is an indispensable preliminary to the adoption of anything of the character of "cardiac gymnastics"; (3) The duration of rest is to be determined by the condition of the patient, especially by the extent of recession the dilatation has undergone, and the position and character of the apex-beat; (4) The effect of exercises upon the heart should be tested before deciding upon their extent or frequency; in all cases there must be sufficient intervals of rest between each exercise; (5) When the condition of a heart has improved under rest, but the strain of even moderate exercise is borne badly, **Massage** of the limbs while the patient is lying down, should be resorted to; in appropriate cases

**Cycling** on the level is one of the best forms of exercise in cardiac cases ; (6) **Saline Effervescing Baths** are useful in a limited class of cases, but they can never replace rest, though they may be beneficial as adjuncts to other treatment ; (7) Mental repose is invaluable, especially in patients of an emotional or neurotic temperament. An abruptly given bad prognosis may be most detrimental, and jeopardize any chance of improvement that may be present.

*Nauheim Treatment.*—With regard to the selection of cases of chronic cardiac affections for this mode of treatment, Dr. Bezley Thorne[9] recognizes four groups : (1) Those which will be cured or benefited very greatly by the treatment ; (2) Those which cannot be cured, but can be greatly benefited ; (3) Doubtful cases ; and (4) Unsuitable cases.

1. Of the group which will be cured or greatly benefited, the dilated, enfeebled, and irritable heart, a sequela of influenza, is one of the most promising, and it is also one that, in many instances, resists treatment by drugs, rest, or change of air, so that the unfortunate sufferer often becomes a chronic invalid with nothing but a broken and almost useless life to look forward to. Another class of case which belongs to this group is that of the dilated and enfeebled heart produced by the raised arterial tension present in the circulation of patients suffering from rheumatic or gouty diathesis. This slowly but continuously acting pressure produces in time an overloaded and overworked heart, and thereby an increasingly impure blood-supply and a progressive weakening of the cardiac systole. Cases of cardiac enfeeblement from excessive smoking and prolonged illnesses, such as typhoid fever and malaria, belong also to this group, for which the Nauheim treatment is a most valuable aid to such methods of cure as rest, tonics, and change of air.

2. Among those cases which cannot be cured but can be greatly benefited, may be ranked those both of rheumatic and gouty origin, in which the valves have been permanently injured, and signs of commencing cardiac failure, such as headache, shortness of breath, palpitation, cyanosis, and pain, are present.

3. Among doubtful cases should be classed a large number of the more advanced forms of valvular affections, whether the result of gout, rheumatism, or other diseases, in which the recuperative powers have been undermined by climatic effect, habits of intemperance, or prolonged illness, and the patient is losing ground.

4. The following are unsuitable : Patients who are, and have been, habitually heavy drinkers, those whom one believes to be suffering from syphilitic affection of the heart, those suffering from marked degeneration of the vessel walls, those exhibiting typical symptoms of aortic regurgitation, and very old people. The chronic heart case usually met with in hospitals, broken down by a long struggle to work when unfit, and accustomed to bad and often insufficient food, is also one of the most unsatisfactory for the Nauheim treatment.

Baldwin[10] and Webster[11] have also contributed accounts of this mode of treatment, which may be useful for reference.

*Digitalis.*—It not infrequently happens that although **Digitalis** appears to be indicated on *a priori* grounds, it does not fulfil the expectation of benefit. Barie[12] discusses some of the conditions which account for such failures. Sometimes the digestion requires unloading; and, until this is relieved by an effective **Purge**, digitalis will upset the stomach, and may lead to nausea and vomiting. After purgation, the drug may act well. In other cases, the drug will fail to act until the patient is at **Rest**, and put on a **Milk Diet**. Another cause of failure is the presence of effusions, such as ascites and hydrothorax, or of congestion of the liver, lungs, or kidneys. When these are removed by **Paracentesis** or other treatment, the effect of digitalis may be quite satisfactory. In others, the withdrawal of blood by **Leeches**, **Cupping**, or **Venesection**, may be necessary before digitalis will act properly. In some cases of recurrent failure of compensation, where the earlier attacks have yielded to digitalis, the drug gradually loses its effect in later attacks; the œdema increases in spite of its use, the dyspnœa is unrelieved, and the patient gradually loses ground. When this happens, it is not the fault of the drug, but of the heart muscle, which is getting worn out, and unable to respond to remedies, and consequently such failure has a very unfavourable significance.

Nor must it be forgotten that the failure of digitalis may be due to a bad preparation. Dr. Barie considers that freshly-made infusion, from leaves which have not been kept too long, is far superior to the tincture. Sometimes it is advisable to begin with a large dose for the first day, afterwards reducing it progressively. In other cases it is preferable to give constant medium or small doses, as in weak contraction accompanied with tricuspid functional insufficiency, also in mitral lesions when the compensation is damaged but not destroyed, with more or less persistent arrhythmia. In old people with atheromatous vessels, digitalis is often ill-borne; and lastly, it is quite inadmissible in most cases of functional nervous disturbance of the heart from neurasthenia, excessive smoking, or dyspepsia.

*Cardiac Tonics other than Digitalis.*—According to Osborne[13] the indications for preferring **Strophanthus** to digitalis are: (1) When there is need of a cardiac tonic, and digitalis produces nausea, vomiting, and too great an increase of the blood-pressure; (2) When a cardiac tonic is indicated and the blood-pressure is already high; (3) When a rapidly-acting cardiac tonic is desired; (4) When there is more nervous irritability and weakening of the heart than actual muscular debility or incompetency; (5) Children are very susceptible to the action of digitalis, and hence strophanthus is many times a better drug for them when a cardiac tonic is indicated.

The indications for **Sparteine Sulphate** are irregularity and nervous irritability of the heart, especially when conjoined with general nervousness. This drug has been observed to be of marked advantage in the disturbed cardiac action combined with increased tension of the arterioles and diminished output of old age.

**Cactus** is of value in having no cumulative action, in seeming not to wear itself out, and to have good action after compensation has been re-established by digitalis in valvular disease, and when some cardiac tonic must be given to keep the compensation intact. When the heart is weak in convalescence from acute disease, and digitalis is not a good drug to use, cactus is beneficial. The same is true in the debilitated heart of old age, when digitalis is contra-indicated on account of its raising the blood-pressure so markedly. In functional disturbances of the heart, as arrhythmia, palpitation, or tobacco heart, this drug is of value.

Moore[14] speaks of the value of **Agurin** as a diuretic in cardiac dropsy. Agurin is a synthetic product, the double salt of theobromine, sodium, and sodium acetate. It is easily soluble in water, and may be given in 10 to 15-grain doses, three times a day, in combination with infusion of **Digitalis,** if required. The diuretic effect is often well marked ; and the administration may be continued without any fear of toxic results.

Merklen[15] has drawn attention to the large quantity of **Chloride of Sodium** contained in cardiac œdema fluid, and advocates a **Milk Régime** in cardiac dropsy, because of the small amount of chlorides contained in that liquid. Achard, in supporting this view, said that he had seen one case in which the dropsy became aggravated by the injection of ten grams of salt. Widal also has pointed out that patients suffering from nephritis or renal congestion are peculiarly susceptible to an excess of chlorides. (See CHLORIDES, p. 13.)

Myrtle[16] reports cases illustrating the value of **Adrenalin** in certain forms of nervous disturbance of the heart. The attack generally comes on suddenly without apparent cause. The patient, feeling perfectly well, detects a little flurry in the heart, with a sense of oppression and weight ; the pulse is feeble, very irregular and intermittent, beating rapidly for a second or two, then halting, missing a beat occasionally. Respiration is hurried and short, but not remarkably so, and a full breath can be readily taken. In this condition he advises ℥xx of adrenalin chloride solution every six hours, which in the cases reported gave prompt relief.

REFERENCES.—[1]*Lancet*, Jan. 30, 1904 ; [2]*Ibid*, April 9, 1904 ; [3]*Johns Hop Hosp. Bull.* May 1903 ; [4]*Amer. Jour. Med. Sci.* July, 1903 ; [5]*Treatment*, March, 1904 ; [6]*Med. Rec.* Feb. 20, 1904 ; [7]*Ibid*, Aug. 29, 1903 ; [8]*Clin. Jour.* May 6, 1903 ; [9]*Lancet*, July 18, 1903 ; [10]*Med. Rec.* Feb. 13, 1904 ; [11]*Scot. Med. & Surg. Jour.* Aug. 1903 ; [12]*Presse Méd.* July 4, 1904 ; [13]*Ther. Gaz.* Dec. 15, 1903 ; [14]*Can. Jour. of Med. and Surg.* May, 1904 ; [15]*Med. Press*, July 1, 1903 ; [16]*Brit. Med. Jour.* April 20, 1904.

**HEART** (**Surgery of**). *Priestley Leech, M.D., F.R.C.S.*

Orlandi[1] records a remarkable case of perforation of the left ventricle fatal only after two and a half hours. The patient, a man of twenty-six, walked home a distance of 190 metres before discovering that he was seriously injured. He then began to bleed profusely, and set out to walk to the hospital, but only managed to walk 150 metres, being carried the rest of the way. An hour and three quarters after the infliction of the wound the thorax was opened, and the wound on the front of the left ventricle closed by two silk sutures. The patient died three-quarters of an hour after the operation was finished. *Post-mortem* the pericardium was full of blood, and the left pleural cavity three-quarters full. The sutures were in position and well tied, but were found to be broken. The wound in the ventricle was a V-shaped one, dividing the substance of the ventricle in a more or less transverse diameter; and transverse wounds, when sewn, put an enormous strain on the sutures at each systole, and it becomes merely a question whether the heart-substance or the sutures should yield. Orlandi has seen six cases of knife-wound of the heart, and in no two have the wounds been alike, so that it is impossible to draw with safety any inferences from the shape of the wound as to the instrument with which it was inflicted.

Schwerin[2] and Noll[3] report cases of wounds of the heart; Schwerin one of wound of the right auricle, which recovered after pyopericarditis, empyema, and pneumonia; and Noll a case of gunshot wound of the anterior wall of the left ventricle, which was treated with good results by **Suture.**

Dr. Brauer[4] suggested a year ago whether in chronic adhesive mediastino-pericarditis the work of the heart could not be lightened by **Section of the Ribs** in appropriate places. Professor Petersen and Dr. Simon operated according to Dr. Brauer's ideas in three cases; all the cases improved, the œdema, dyspnœa, cyanosis, and ascites diminishing. In the first case the operation was confined to section of the ribs; in the other two cases a portion of the sternum 4 to 5 cms. in width was also excised. The removal of the posterior layer of periosteum of the sternum is absolutely necessary, or bone will be re-formed. This part of the operation is very difficult, as the periosteum is firmly adherent to the heart.

Riethus[5] reports a case of a young man who was shot in the chest with a 6-mm. bullet from a revolver, the wound of entrance being over the sternum, on a level with the attachment of the fourth rib, and one finger-breadth to the right of the median line. At the end of twenty-four hours the patient had reacted fully, felt perfectly well, and presented no symptoms beyond slight pain in the bullet wound; with the exception of a small sero-sanguineous pleural effusion, which cleared up spontaneously. The patient made a rapid convalescence until the sixteenth day, when he developed a peculiar irregularity

of the pulse. By means of skiagraphs the bullet was located in the heart, apparently in the right ventricle. By careful examination with the fluoroscope it was found that the bullet was not fixed, and that it changed its position within certain limits. In general the bullet followed the movements of the heart during systole and diastole, but in addition it had an independent motion. As long as the irregular action of the heart continued, repeated fluoroscopic examinations disclosed the same shifting movements of the bullet. After six months the irregularity rapidly subsided, and it was found that the "springing" movements of the bullet had disappeared; but lateral movements synchronous with the heart-beats still persisted. A year has now elapsed since the injury, and now no motion of the bullet within the ventricle can be observed. The bullet probably barely penetrated the wall of the ventricle at the time of the injury, and on the sixteenth day became dislodged and fell into the cavity of the right ventricle, causing the irregularity of the heart by irritation of the endocardium. Later, as the pulse returned to normal, the bullet probably became fixed by adhesions.

Biondi[6] discusses wounds of the heart mainly from the point of view of length of survival after injury. The position and nature of the wound, and especially the amount and rapidity of the hæmorrhage, are the chief determining factors. On the whole, survival for a certain period is more common than sudden death. Wounds of both ventricles, of the aorta at its origin, of the atria, all of which lead to great hæmorrhage, are more likely to cause rapid death by anæmia; after oblique wound of one ventricle, life may be prolonged. Damage to the coronary artery or its branches is usually rapidly fatal. Injury to the nervous mechanism of the heart has to be reckoned with. Hæmopericardium may be a cause of rapid death, either by direct mechanical effect or by hæmorrhage. In the majority of cases of hæmopericardium, death has occurred very rapidly, even fulminating in fact.

References.—[1]*Il Morgagni*, Oct. 1903; [2]*Centr. f. Chir.* No. 36, 1903; *Brit. Med. Jour.* Nov. 7, 1903; [3]*Ibid*; [4]*Ann. Surg.* Dec. 1903; [5]*Deut. Beitr. f. Chir.* Bd. 67; [6]*Clin. Méd.* April 13, 1904; *Brit. Med. Jour.* July 16, 1904.

**HERNIA.** *A. W. Mayo Robson, F.R.C.S.*

Useful contributions on hernia have appeared in the medical journals during the past year, a number of which are worthy of note.

Sultan, of Göttingen, will only admit the title of traumatic hernia in cases:—(*a*) Where there is definite evidence of the occurrence of sudden effort which would raise the intra-abdominal pressure; (*b*) Where it is certain that no hernia existed beforehand; (*c*) If the onset of the trouble was associated with pain so great that the patient had to leave work, and where examination by a surgeon elicited tenderness and pain. He admits that the tearing and opening up of the inguinal canal does not usually result in swelling or effusion of blood, and points out that a weak hernial aperture elsewhere is rather to be looked on as

evidence of a previous hernial predisposition, and against the diagnosis of traumatic hernia.

Nicoll[1] describes his operation for the radical cure of femoral hernia. The sac is split longitudinally and the two halves are interlocked by passing one-half through a slit in the other. The femoral aperture is closed by attaching Poupart's ligament directly to the bone. Two holes are drilled in the bone, and the sutures passed in a special manner. No metal foreign body is introduced as in Roux's operation.

*Hernia in Children.*—W. B. Coley[2], in discussing the question of whether the treatment should be mechanical or operative, expressed the opinion that the truss should be tried up to four years of age; rarely after that. The truss should be applied as soon as the hernia is discovered, and worn day and night. In cases in which the truss failed to correct the hernia, or when strangulation occurred, or when the hernia was irreducible, or associated with hydrocele, an operation should be done without delay. In a case in which a truss had never been worn, and which was not seen until after the age of four years, the question of mechanical or operative treatment had to be decided according to the circumstances of the patient. An operation saved time, and the cure was more likely to be permanent. Almost any operative treatment succeeded in children much better than in adults.

Stiles[3], in a paper read before the British Medical Association at Oxford, summarizes the results of 360 operations for hernia in infants and young children. The operation he performs is practically that introduced by the late Sir Mitchell Banks. A point of great importance is the after treatment. The sutured wound is dusted with boracic acid and left exposed, no further dressing of any kind being applied. The infant is kept flat in bed by means of "reins," and a metal cage is placed over its body to keep the bed-clothes from coming in contact with the wound. In the 360 cases, five died. Three of these occurred in the first 100 cases. Four have had recurrence.

*Partial Enterocele.*—C. W. Hotchkiss[4] recorded six cases. In four of them resection of the gut had to be performed. Three of the patients died. In reviewing the cases, the writer points out the lack of uniformity of the symptoms, the absence of any single pathognomonic sign which would have made an early diagnosis reasonably certain, and finally the great disproportion between the severity of the earlier symptoms and the real gravity of the case.

*Incarcerated Hernia.*—Hagen[5] recommends the use of **Atropine** in incarcerated hernia. In incarceration there is paresis of the musculature of the intestinal loop, accompanied by a reflex tetanic irritation of the external oblique muscle. Since atropine first stimulates muscles supplied by sympathetic nerves, it will tend to overcome the paresis; and its subsequent paralysing action will be directed against the tetanus of the abdominal muscle. The author advises the use of 1–1000 solution of atropine sulphate, half a cc. of which is injected into the

neighbourhood of the hernia. If effective the dose is repeated every hour; if not, double the dose is injected, and a gentle attempt at taxis is made. After six or eight hours, laparotomy is indicated if vomiting continues, and the pulse and facial expression do not improve.

*Umbilical Hernia.*—Mayo's method of treating umbilical hernia by overlapping of the aponeurotic margins of the opening is well known, and I can speak from personal experience of its great usefulness. Mr. Moynihan records 11 cases treated in this way[6].

*Diaphragmatic Hernia.*—Eustace Smith[7] records a case of a male child aged two years. Condition discovered *post-mortem*. Behind liver and immediately to the right of the œsophageal opening, was a diaphragmatic hernia. The tendon of the diaphragm was stretched out over the protrusion, and formed a sac about the size of a hen's egg. The sac contained about half the stomach, including the cardiac and pyloric orifices, so that the finger could be passed straight into the sac from the œsophagus or from the duodenum. Most of the greater curvature was outside the sac. There were no adhesions, and the hernia was readily reduced. The hernia was considered to be of the congenital variety. Chadbourne's case[8] was a man, aged thirty. There was a large defect in the left half of the diaphragm, through which had passed the whole stomach, the omentum, and part of the large intestine. There was no sac.

Bloodgood, in commenting on the relative infrequence of *post-operative intestinal obstruction* after herniotomy, mentions a case where intestinal obstruction followed operation for reducible left inguinal hernia. A second operation was performed 56 hours after the first. The loops of small intestine first exposed were apparently normal, then a number of loops of slightly distended intestine were encountered, apparently of the jejunum and upper portion of ileum. A loop of ileum was withdrawn, which showed a definite constricting ring of about 3 cms. in circumference. In view of the position and character of the constricted intestine, Bloodgood felt justified in considering that the loop of intestine had been pushed into the fossa duodeno-jejunalis (the so-called Treitz's fossa) during one of the acts of extreme retching which took place after the first operation. The constricted loop had undoubtedly been displaced during the withdrawal of the coils of intestine. The patient recovered, and was in perfect health two years and two months after the operation.

*Post-operative Hernia.*—Wolff[9], in commenting on this condition, states that a careful study of the histories of patients seemed to demonstrate that hernia occurred most frequently in the cases in which pronounced abdominal distension developed within the first few days after operation. He advocates drainage of the incision and the prevention of post-operative meteorismus.

Dowden[10] advocates the use of **Exercises** for strengthening the abdominal muscles, for a month or more before an operation is under-

taken. It is especially needed in cases where the abdominal walls are lax. He maintains that tonic contraction of the muscles, obtained by "pulling in" the abdomen, is the best method.

Baldwin[11] in a paper entitled "One thousand Abdominal Closures by a new method, without a known Hernia," describes his method in detail. It depends on the combined use of a helix of iron wire and "through and through" sutures of silkworm gut. Several cases of successful treatment of post-operative hernia by introduction of a silver wire filigree have been recorded.[12]

Winslow[13], assuming that the aponeurotic coverings are the chief supporting structures of the abdominal wall, and that approximation by overlapping, in doubling the strength of the aponeurotic layers doubles the strength of the abdominal wall at the seat of incision, holds that it is advisable to employ this principle in closing abdominal wounds. The following description is given by the author, of the technique practised for closing an incision made in the middle line, or one for attacking a diseased appendix or gall-bladder. The integument and subcutaneous tissue are incised down to the aponeurosis, which is then laid bare by reflecting back the skin and fat for an extent of an inch and a half on each side of the incision. The aponeurosis is next incised in the same line and directly beneath the skin incision, and two flaps, one on each side of the incision, are raised from the underlying muscle by blunt dissection, one flap of aponeurosis being freed for an inch or so from its cut margin; the other for about half that distance. The incision through the rest of the abdominal wall is then completed. When the wound is closed the peritoneum is approximated by a continuous suture. The muscular layers, if well developed, are brought together by interrupted sutures. Then the cut margin of the aponeurotic flap, which was but slightly freed, is stitched to the base of the opposing flap by interrupted or mattress sutures. The free margin of the opposing flap is lapped over the other flap and stretched down to its surface. The margins of the skin are then brought together.

An excellent review of the recent literature on hernia has been published by Carless[14].

References.—[1]*Scot. Med. and Surg. Jour.* Dec. 1903; [2]*Med. Rec.* June 25, 1904; [3]*Brit. Med. Jour.* Oct. 1, 1904; [4]*Ann. Surg.* Feb. 1904; [5]*Med. News*, Jan. 23, 1904; [6]*Lancet*, July, 1904; [7]*Ibid.* May, 1904; [8]*Amer. Jour. Med. Sci.* Aug. 1903; [9]*Centr. f. Chir.* Dec. 15, 1902; [10]*Scot. Med. and Surg. Jour.* Nov. 1903; [11]*Ann. Surg.* Nov. 1903; [12]McGavin, *Med. Press*, Dec. 2, 1903; Willard Bartlett, *Ann. Surg.* July, 1903; [13]*Ann. Surg.* No. 2, 1904; [14]*Pract.* Feb. 1904.

**HERPES.** *Norman Walker, M.D.*

Howard, jr.[1], discusses the pathology of herpes, both of the face and trunk, using as his text two cases in which he was fortunate enough to obtain *post-mortems*. These died of croupous pneumonia, and there was found on microscopic examination degeneration of the cells and hæmorrhage and infiltration into the posterior root ganglia.

Whether the herpes affects the trunk or face, the ganglionic lesions are similar. He concludes that herpes, like pneumonia, meningitis, and inflammation in general, is a pathological condition, with definite lesions, capable, however, of being excited by a variety of causes, and not always produced by the same conditions, an efficient cause being one producing compression, degeneration, or destruction of ganglion tissue. It is not improbable that the primary lesions are often due directly or indirectly to the soluble toxins of various micro-organisms. The special frequency of labial and nasal herpes, and of herpes of the head and face in general, in malaria, pneumonia, and cerebrospinal meningitis, is readily explained. In the case of malaria the organisms in the circulating blood often accumulate in the brain, while the Gasserian ganglia may be readily affected by congestion, the action of toxins, or even by capillary thrombi of parasites. In pneumonia, the organisms or their toxins may locate in the ganglia. What, however, to his mind seems the most reasonable predisposing cause of the frequent occurrence of labial and nasal herpes in this disease, is the marked passive congestion which is so often present. This marked congestion, which favours hæmorrhage, the action of the toxins, poisons, and organisms in the blood, and thrombosis, may probably of itself, by pressure, and by interfering with nutrition of the ganglion cells, cause degeneration sufficient to excite the herpetic changes.

With regard to recurrent herpes, Du Castel[2], considering mainly the genital and buccal varieties, points out the intense moral effect in both cases, and refers to the relationship of the first to syphilis and the second to cancer. In his opinion there is no definite preventive against recurrence. Constitutional taints of rheumatism, struma, etc., must be combated ; **Arsenic** in large doses is sometimes successful. Further, in the matter of buccal affections, the hygiene of the mouth requires careful attention. Local treatment sometimes yields successful results, and he quotes a case treated by Verneuil, where recurring catamenial herpes of the neck disappeared after the use of injections of 5 per cent **Iodoformed Ether.**

Corta[3] reports three cases of herpes zoster occurring during an epidemic of mumps, each developing in the second week of the disease.

References.—[1]*Amer. Jour. Med. Sci.* Feb. 1903 ; [2]*Med. Press*, Jan. 10, 1903 ; [3]*Gaz. deg. Osped.* Nov. 1, 1903.

**HIP JOINT.** (*See* Tuberculosis, Surgical.)

**HUMERUS, Fracture of.** (*See* Fracture.)

**HYPERIDROSIS.** *Norman Walker, M.D.*

Vaillard[1] reports favourably of the effect of **Formalin** in excessive sweating of the feet, his observations being made on soldiers in the French army. The strength used varies from .4 per cent (the commercial product) to 2·5 per cent, weaker solutions being used if

there is much maceration. Wet compresses containing this are applied to the feet three or four times in the twenty-four hours, and the duration of treatment may be as much as eight days. The effect is only temporary, but repeated applications bring about the desired cure. The formalin deodorizes the perspiration, and hardens the epidermis.

Brocq[2] finds that bathing with **Formol,** a tablespoonful to a litre of water, or 1–4000 **Permanganate of Potash**, removes the odour. He also recommends this lotion :—

| | | | |
|---|---|---|---|
| ℞ Naphthol | 5·0 | Alcohol | 100 |
| Glycerin | 10·0 | | |

The parts subsequently being dried and dusted with talc, starch, or bismuth. Between the toes a few drops of the following are useful :—

| | | | |
|---|---|---|---|
| ℞ Red oxide of lead | 1·0 | Liq. plumbi subacet. | 29·0 |

References.—[1]*Arch. de Méd. et Pharm.* Jan. 1903 ; [2]*Jour. d. Prat.* 1903, p. 201.

**HYSTERICAL NEUROSES (of the Skin).** *Norman Walker, M.D.*

The subject of hysterical phenomena appearing on the skin has come frequently to the front of late years. Van Harlingen[1] recalls that in a former paper he reported several cases of erythema in hysterical individuals, which led to excoriation, or perhaps what might be called superficial gangrene. Most hysterical skin affections appear, at least at first, to be vasomotor in their nature. Cases of hysterical gangrene showed certain characteristics common to all. The great majority—in fact, nearly all the cases—occurred in young females showing signs of hysteria, usually of a mild type. The affection frequently developed after some slight accident, a burn or some injury from a corrosive substance, a cut or a puncture. The first eruption commonly occurred at or in the immediate neighbourhood of the injury, with considerable sensory irritation. A similar irritation usually introduced subsequent outbreaks. Sometimes the prodromata of gangrene were entirely absent ; at other times the gangrene developed from an urticaria or erythema, or more frequently from pemphigoid blebs. Occasionally, a zosteriform eruption was the first symptom. When gangrene was established, the separation of the eschar often left an intractable ulcer terminating in a keloidal scar. While the extremities were the favourite sites of hysterical gangrene, the face and mammary region and other localities, such as the external aural cavity and the mucous membranes, were sometimes involved. The question of self-infliction was of great importance in the study of these cases. In a few instances this had been verified, and was traced to the usual causes of a desire to excite sympathy, to escape disagreeable tasks, etc., but a careful investigation into other cases failed to show the use of external applications.

Savill[2] discusses seven different types of hysterical skin symptoms :

1. Attacks of generalized pallor of the surface.
2. Attacks of flushing.
3. Fugitive localized patches of congestion suddenly appearing and disappearing.
4. Dermatographia.
5. Acro-paræsthesia and erythromelalgia.
6. Urticarial erythematous hæmorrhagic exudations.
7. Localized ischæmia.

The first three are peculiar to hysteria, and the last four are expressions of a vasomotor neurosis plus a toxæmia. "Reviewing the pathology of the seven skin conditions we have been considering, it seems clear that the first two (generalized pallor and flushings) are part of the 'splanchnic storms' which form an integral part of hysteria. The third (the congestive patches) constitute visible evidences of the reflex excitability of the local vasomotor mechanism which also form part of the same disorder. The fourth, fifth, and sixth (dermatographia, acro-paræsthesia, and exudative skin conditions) are products, in widely varying proportions, of this same reflex and emotional excitability *plus* hæmic changes. The seventh (ischæmia) owns the same pathology, but is manifested as a vascular spasm only. Among the co-operating causes sometimes in operation may be mentioned toxins of gastro-intestinal origin, articles of diet, traumatism, toxins of insects, etc. But without the vasomotor instability, these cannot act." In conclusion, he points out the marked resemblances (embryonic, physiological, and pathological) which exist between the skin and the nervous system. Syphilis and hysteria frequently attack both.

References.—[1]*Med. Rec.* Sept. 19, 1903; [2]*Lancet*, Jan. 30, 1904.

**ILEUS, PARALYTIC.** (*See* Intestinal Disorders.)

**IMPETIGO.** *Norman Walker, M.D.*

Colcott Fox[1] gives a comprehensive account of the history of the differential diagnosis of this disease, and its eventual separation from other crusted eruptions. He discusses *en passant* the bacteriology.

Adamson[2] observed bullous lesions in a case of impetigo circinata. The condition affected a boy of five years of age, and was localized to the limbs and abdomen, whence it disappeared after a week of treatment with **White Precipitate Ointment** 5 grs. to the ounce. Three weeks later it recurred in a more extensive form, and again was removed, but soon afterwards the proximal ends of the nails showed the disease. Bacteriologically, staphylococcus albus and streptococcus were found in the bullæ.

References.—[1]*Clin. Jour.* Jan. 20, 1903; [2]*Brit. Jour. Derm.* May, 1904.

**INFANT FEEDING.** *Geo. F. Still, M.D.*

The paramount importance of *breast-feeding* can hardly be emphasized too often, and is well shown by some statistics recently published by H. Armstrong[1].

When for any reason the mother cannot suckle her child, a **Wet-nurse** is theoretically the only adequate substitute. Walsh[2] says that in a large experience of this method of feeding, he has never had cause to regret having recommended it, and that he can recall many instances where little infants have been apparently snatched from the grave by a timely change from artificial feeding to natural food. The nurse should not be menstruating, but according to Graetzer[3] this is not necessarily a serious obstacle, as in many cases it has no influence upon the quantity or quality of the milk. The latter insists on the necessity for cleanliness in these women, and advises that the breasts should be washed with a 4 per cent solution of boric acid.

When neither the mother's milk nor that of a wet-nurse is available, the problems of **Artificial Feeding** have to be faced, and although there is a general consensus of opinion that the milk of some other animal, particularly that of the cow, is the best substitute, there is still considerable difference of opinion as to the best method of adapting these milks to the need of the infant. The admirable work of T. M. Rotch in America has to a large extent reduced the difficulties of artificial feeding, by teaching scientific methods of modifying cow's milk so that it may resemble human milk in its percentage composition; but as Rotch himself points out[4], "infants cannot be fed by rule of thumb." Each infant must be studied by itself; the object of the so-called "percentage-feeding" is not to provide certain formulæ for each week or month of infancy, but to make it possible for the doctor to vary the proportion of each constituent in such a way that he may know exactly what the infant is taking, and may be able to vary each constituent separately with exactitude until he finds what will suit.

The most frequent mistake is to give milk containing too high percentages; in particular the proteid percentage is often too high. At birth an infant should have only 0·75 per cent proteid, and not until the end of the fourth month should it have 2 per cent of proteid, the percentage present in human milk; in other words, it must not be imagined that an infant during the first few months of life can take as high a percentage of cow's milk proteids as it could do of human milk proteids. The percentage of fat is to be increased more rapidly; beginning with 1·5 or 2 per cent, the infant can usually take 3 per cent by the end of the third week, and at the end of the sixth week 4 per cent. Rotch seldom finds it advisable to give more than 4 per cent of fat at any period of infancy. Sugar should be given at birth in the proportion of 5 per cent, and the maximum of 7 per cent may be attained as early as the second or third week.

As to the diluent to be used, there is some difference of opinion. Some think highly of **Barley-water.** It has been shown that the saliva of even very young infants has some amylolytic power, though very feeble, and it is believed that barley-water serves the purpose of attenuating the curd formed in the stomach; but as Rotch points out, human

milk, the standard for infant-feeding, contains no starch; barley-water is practically nothing but starch and water, and it is possible that the small diastasic power of the infant's saliva may easily be overtaxed if used too early. **Boiled Water** is suggested as a useful alternative diluent. The present writer[5] has pointed out that barley-water is objectionable not merely in theory, but in practice. He believes that he has several times seen slight degrees of rickets result from its prolonged use, and there is no doubt that it is not uncommonly the cause of flatulence and discomfort, and sometimes of looseness of the bowels. **Whey** seems to be the only ideal diluent; it is in fact Nature's diluent for milk, which may be regarded as whey containing in suspension curd-forming proteid and fat. When with the aid of rennet, or of some weak acid such as sherry, milk is curdled and the curd strained off, the caseinogen, the curd-forming proteid, is removed, and carries with it much of the fat, but the remaining turbid fluid—the whey—contains practically the same proportion of lact-albumin, salts, and sugar as is present in whole milk; if therefore whey be used as a diluent there is no dilution whatever of the lact-albumin, surely a great gain. If, however, the whey is prepared with rennet, care must be taken not to heat it above 155° F., else the lact-albumin will probably be coagulated; this temperature, according to Rotch, is sufficient to stop the action of the rennet ferment without coagulating the lact-albumin.

As a matter of practice it is a common observation that **Insufficient Dilution** of cow's milk is one of the most frequent causes of digestive troubles in an infant, and there is therefore sometimes a tendency to run to the opposite extreme, and use mixtures in which the infant gets only 0·5 per cent, or even less, of proteid. R. A. Potter[6] records a series of cases in which œdema, which had supervened in infants fed on watery mixtures containing little or no proteid, rapidly disappeared on the addition of proteid to the food. It is, however, in the supply of a proper proportion of proteid that the chief difficulty of feeding with cow's milk lies, and in many cases the only way out of the difficulty is **Peptonization** of the milk. But this has disadvantages, particularly its liability to produce diarrhœa and cause scurvy.

Recently, as the outcome of experimental investigations by A. E. Wright, a simpler and more satisfactory method has been devised by F. J. Poynton[7], by which the curd formed in the stomach is rendered finer and therefore easier of digestion. To each ounce of milk given, one grain of **Sodium Citrate** is added. This is best done by ordering the requisite number of grains of this salt, in a drachm of water, to be added to each feed; thus if one ounce of milk diluted with an equal quantity of water is being used, the mother is told to add a teaspoonful of the mixture (sod. citratis gr. j, aquæ ℥j) to each feed; if three ounces of milk with two of water are being given at each feed, the prescription will be (sod. citratis gr. iij, aquæ ℥j). The citrate of soda

renders the curd more digestible, it is cheap, it is easily handled in prescribing, it allows the milk to be given in a more concentrated form, and thus avoids to some extent the danger of underfeeding: it entails no risk of scurvy, and being given as a medicine, it gains the confidence of the mother. Its value is chiefly in the weaning of healthy infants on to cow's milk, and in correcting curd indigestion. It cannot be expected to succeed in the rare cases where there is complete intolerance of cow's milk, nor in cases of gastro-enteritis from impure milk, nor in very intractable cases which have been subjected to all sorts of different methods beforehand, nor in organic disease such as congenital hypertrophy of the pylorus.

The value of a clear appreciation of the percentage composition of the various kinds of milk, and of the milk-preparations in common use for infant-feeding, is undoubtedly great, but as has recently been emphasized by H. D. Chapin[8], mere chemistry has its limitations in infant-feeding. The bare fact that a particular modification of cow's milk shows on analysis a percentage composition the same as that of human milk, does not necessarily show that it will suit any particular infant; nor even if it is taken well by the infant, does it follow that it is the best food for him. Perhaps no more striking illustration of the incompleteness of any such purely chemical basis in infant-feeding can be found, than the success which has attended the use of **Whole Milk** in infant-feeding. Even at a few weeks old, some infants will thrive excellently on undiluted cow's milk, simply pasteurized, and given with or without the addition of a small quantity of milk sugar. Eleanor Fitschen[8] states that feeding with whole milk should not be begun earlier than the tenth day of life, and that its most satisfactory results are seen in infants over the age of four weeks. When it is used for infants who have previously been breast-fed, the amount of milk taken from the breast at each feed should be ascertained by weighing the infant before and after nursing, and at first, half this quantity of cow's milk diluted with an equal quantity of water should be given; and then by daily diminution of the proportion of water the use of undiluted milk should be gradually reached. Haworth[9], after an experience of ten years in the use of whole milk for infant-feeding, considers that there are very few cases in which it does not succeed. He recommends the addition of 5 per cent of lime-water, and ordinary cane sugar in the same proportion. The amount of the undiluted milk to be used at first should be $\frac{1}{100}$th of the total body-weight of the infant.

Somewhat similar, but perhaps more surprising in its success, is the method of feeding described by Wood[10], who used **Undiluted Top-milk**, *i.e.*, the top layer of milk which had stood in a basin for two hours. This contained 8 per cent of fat, and in feeds of four ounces every three hours caused marked improvement in a marasmic infant of nine months. The same method was used successfully in 31 cases.

Years ago Budin recommended the use of whole-milk for infants, sterilized. Now there is a growing feeling against **Sterilization.** The value of sterilization as a means of reducing the risk of infective diseases is undoubted, and for this reason it has been used by municipal authorities in the preparation of modified milk for the infants of the poor. As is well known, however, sterilized milk may produce scurvy, and one such result from the municipal sterilized milk has been reported by H. Ashby[11]. It has been suggested also[12] that the so-called "sterilization" of milk is apt to give a false sense of security, for actual freedom from bacteria is not always attained by it. Robertson and Mair[13] examined a large number of bottles of supposed sterilized milk supplied for infants by the municipal authorities of Leith, and found that only 15 per cent of the bottles contained really sterile milk. According to Lesperance[14] milk that has not been treated beyond a natural temperature is more easily digested, and gives "greater vitality to the system," whereas sterilized milk produces "soft muscles, a generally irregular development, and a weakened resistance to infectious diseases"; the difference, he thinks, is due largely to the destruction of the soluble ferments of cow's milk, which takes place when it is heated to a high temperature.

The age at which **Cereals** should first be given is a matter on which there is much difference of opinion. Blackader[15] would add them at the tenth or twelfth month, particularly oatmeal, inasmuch as it is one of the richest in iron, and the infant requires iron specially. Hartshorn[16] would use cereals as early as seven months, and after trial of flaked rice, cream of wheat, oatmeal gruel, and farina, came to the conclusion that none of these was so satisfactory as bread and milk. T. M. Rotch[17] states that the amylolytic function of the infant is very feeble at first, and only gradually increases, becoming well developed by the end of the first year; he considers therefore that the use of cereals of any kind is not advisable during the early months of infancy, and that when they are used, the proportion given must be regulated carefully according to the individual digestive power of the infant, for infants vary greatly in their capacity for digesting cereal foods. A preparation which belongs to this class to some extent, is **Reinhardt's Soluble Food,** which has recently been recommended by Kraus[18]. It is an amorphous yellowish powder with slightly sweet taste, and the addition of milk and water in suitable proportion makes with the powder a food which in many respects resembles human milk; prepared however thus, it contains both starch and cellulose. Given in the proportion of one teaspoonful of the powder to 5 teaspoonfuls of water and one teaspoonful of milk, it caused rapid improvement in a marasmic infant only seven weeks old. He mentions other instances in which it suited infants well, and considers it a valuable means of rendering cow's milk more digestible.

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**INSANITY.** *Purves Stewart, M.A., M.D.*

*Blood Changes in Acute Insanity.*—In no respect does modern psychiatry contrast more strikingly with the metaphysical and often mystic theories of former days, than in its application of purely physical methods to the clinical examination of mental disorders, all of which, after all, are but results of physical brain disease. The group of mental disorders attributable to cerebral toxæmia becomes wider year by year. It is therefore of interest to compare the blood conditions in acute mental disease with those found in other diseases of microbic origin.

Lewis Bruce[1], of Murthly, has written a valuable article recording certain observations on the blood of patients suffering from acute continuous mania. He shows that not only are such blood examinations of diagnostic significance, but they are also of considerable value for prognosis. The method practised was briefly as follows: A small quantity (about 2 cc.) of turpentine is injected, with antiseptic precautions, into the subcutaneous tissue of a patient suffering from acute mania. As a result an abscess forms. On the third day the contents of this abscess—pus and blood-serum—are aspirated, and a few drops are inoculated into tubes of sterile broth, which are then incubated for forty-eight hours. In 8 cases out of 25 thus treated, the broth was found to have developed a pure culture of a small diplococcus, staining feebly by Gram's method. In all the cases, save two, a degree of fever appeared within twenty-four hours after the turpentine injection, the temperature in several instances rising as high as 102° F., but in no case was the patient physically the worse for the abscess. In fact, many cases showed such marked benefit, that a turpentine abscess was frequently induced in cases of acute mania as a therapeutic measure, the leucocytosis induced tending to aid recovery.

Bruce suggests that acute mania may be the result of a toxæmia arising from the presence in the blood of the above-mentioned diplococcus; he further believes that when recovery takes place a condition of immunity is established. In 50 cases of acute insanity (including 14 cases of acute mania) the number of leucocytes in the blood was carefully estimated. It was found that within a few days after the onset of acute mania, there appears a high leucocytosis, ranging from 18,000 to 20,000 per cubic millimetre. Further, it was observed that the percentage of polymorphonuclear cells is always over 60, often over 70 per cent. The higher the leucocytosis and the

greater the percentage of polymorphonuclear cells, the better is the prognosis. If the patient does not recover at once, the leucocytosis sinks to between 12,000 and 16,000 (which is about double the normal number). When signs of recovery begin to appear, a curious change occurs in the blood. The leucocytosis increases, and the percentage of polymorphonuclear cells rises, reaching perhaps 80 per cent in favourable cases. When recovery is complete the leucocytosis persists, but the percentage of polymorphs falls to 70 or 60 per cent. On the other hand, in cases which do not recover but tend to become chronic, the leucocytosis remains at from 12,000 to 16,000, with slight variations, but the percentage of polymorphs falls, and at last, after one or two years, it may sink to anything from 50 to 20 per cent.

These observations do not apply to the mania of chronic alcoholism, nor to that of *folie circulaire*. The conclusions seem to indicate that acute mania, at any rate, is an infective condition, associated with the presence in the blood of a toxic agent, and that the advent of recovery is marked by a high degree of leucocytosis persisting for some time after convalescence is established.

*Acute Insanity and Toxæmia.*—The toxic origin of many cases of acute insanity becomes yearly more evident. The poisons of alcohol, syphilis, morphia, etc., have long been recognized as producing their associated insanities; in most cases of puerperal insanity, septic infection of the genital tract is present; whilst in a large number of acute insanities auto-intoxication from the intestinal canal is the probable mode of infection. These facts are of profound significance in the prevention and treatment of certain forms of acute insanity. Bouchard and others have claimed encouraging results from the administration of **Intestinal Antiseptics.** Still more efficacious, however, is thorough cleansing of the intestinal tract by **Gastric Lavage** and by **Saline Purgatives,** together with **Warm Shower-baths** and **Hot Packs.** Such a course frequently produces marked sedative effects in acute insanity, as in cases recorded by Bruce Smith[2], and others. Similar treatment, together with careful disinfection of the genital tract, has also proved of benefit in cases of puerperal insanity.

The problem of the prevention of insanity is one deserving of consideration. As in any other physical disease, the predisposing and exciting causes should be sought for, and, if possible, removed. Those forms of insanity due to deficient cerebral development, or to structural lesions of the higher cerebral centres, are, of course, beyond the possibility of prevention. But a large number of insane patients become so, as it were, by accident. Undoubtedly, if the exciting causes be sufficiently powerful, any person may become insane, the liability to insanity varying inversely with the stability of the nervous system. As Edridge-Green[3] puts it, just as a person with healthy digestive organs may suffer at last from dyspepsia from continued abuse of these organs, so also may the healthy nervous system give way under con-

ditions of exceptional strain, or through the direct influence of syphilis or other toxæmic conditions. On the other hand, a person who is strongly predisposed to insanity by hereditary influence, may escape an attack, through the absence of an exciting cause. In cases with a strong hereditary predisposition to insanity, the patient should be instructed to avoid the stress and excitement of town life and of excesses of whatever kind. The gastro-intestinal functions must receive special care. A congenial occupation, free from monotony, will tend to prevent that excessive introspection which is so often the forerunner of acute mental symptoms. Malnutrition and insomnia must be especially guarded against, and in this way we may succeed in warding off insanity from many who might otherwise become affected.

*Climacteric Insanity.*—In non-medical circles there is a widely-prevalent impression that if a female patient is suffering from mental disorder, the onset of the menopause is likely to usher in a change for the better. Such is not the case. On the contrary, as Savage[4] points out, patients with a tendency to nervous or mental break-down, or who have perhaps had attacks of insanity, are much more likely to break down permanently at the climacteric. Even in healthy women the menopause is not infrequently associated with fullness in the head, sleeplessness, malaise, etc., and if the nervous system be already weakened the climacteric exercises a profoundly disturbing influence. Climacteric insanity is more frequent in single women than in married, and still commoner in widows: in fact it has been termed a "widow's disorder." And a large proportion of cases are associated with *alcoholism*. In mild cases there may be merely an exaggeration of the ordinary symptoms of the climacteric. Thus a woman who experiences flushing associated with the menopause, may misinterpret her sensations and think that she is blushing, that people are looking at her, and that there is something of which she is ashamed. Similarly the ordinary feeling of fullness in the head may be misinterpreted, and cause the delusion that there is a cancer in the brain. In addition to such mere false interpretation of symptoms, there often occurs a change in temperament. Everything becomes exaggerated; *e.g.*, there may be an excessive "dust and dirt consciousness," rendering the patient tyrannical towards her servants and family. Amorousness, nymphomania, and obscenity are also frequent symptoms, and these may lead the patient to make unfounded sexual accusations against her husband or other men (clergymen and doctors being the chief victims in this respect). Defective control may lead to impulsive acts, either homicidal or suicidal, and hallucinations and delusions of all kinds may develope. *Kleptomania* is also more commonly met with at the climacteric than at any other period of life. The great majority of mental disorders are of a depressed type; melancholic, hysterical, with ideas of misery and persecution and watching, and a considerable number of these patients attempt suicide.

The prognosis is not encouraging. The climacteric in itself does not tend to secure recovery. Treatment must be on general principles. For *nymphomania* Savage recommends a mixture containing ext. salicis nig. ℥j with pot. bromide ℥ss at night, which often procures sleep and allays the erotic tendency.

*General Paralysis of the Insane.*—Pathology.—The overwhelming majority of observers refer this disease to an antecedent syphilitic infection, and the evidence is strong in favour of the view, "no syphilis, no general paralysis." Recently, however, Ford Robertson[5] has endeavoured to maintain that the syphilitic hypothesis is not conclusively proved. In support of his contention, he lays stress on the fact that only a small proportion of syphilitics subsequently develop general paralysis of the insane or locomotor ataxy. And whilst admitting that syphilis strongly predisposes to the development of general paralysis, he maintains the somewhat startling view that the disease is causally associated with an active bacterial infection from the alimentary and respiratory tracts. To such bacterial infection, with its secondary toxæmia, he attributes the rises of temperature, the leucocytosis, the septic condition of the mouth, etc., which are commonly observed during life. Robertson's facts, however, are not conclusive in support of his own hypothesis, and are moreover explicable simply as a terminal infection of the general paralytic patient by the organism above described.

The eminently syphilitic nature of the disease is strikingly confirmed by certain observations of Krafft-Ebing, who selected 9 patients suffering from general paralysis in whom no history of previous syphilis could be obtained. Each patient was inoculated from fifteen to twenty times with material from mucous patches and hard chancres, and all of them, with one exception, were kept under observation for 148 days. Yet in no case did the patient develop syphilis. Presumably, therefore, they had previously suffered from the disease.

Why then do so many syphilitics escape without subsequently developing tabes or general paralysis? And why does one syphilitic patient develop tabes, whilst another developes general paralysis? The answer to these questions is not to be found in the intensity of the antecedent syphilis, for it is well known that a slight case of syphilis is just as likely as a severe one to be followed by tabes or general paralysis. There must therefore be some other factor which determines whether tabes or general paralysis shall supervene. And that factor, as Edinger[6] pointed out, often consists in over-exertion of certain definite nerve paths. Thus Edinger was able experimentally to produce, in the spinal cord of the rat, lesions somewhat resembling those of tabes, by rendering the rat anæmic by pyrodin, and making it run for weeks in a treadmill. Clinically, as Purves Stewart[7] and others have stated, a certain amount of evidence also points in the same direction. In many cases of tabes, the first symptom of the

disease follows some special over-exertion ; so also in many cases of general paralysis a life of mental excitement or stress is a common antecedent. We may therefore possibly do something towards the prevention of these diseases by cautioning every syphilitic patient against excessive physical or mental exertion.

Diagnosis.—In a typical case of general paralysis this presents little difficulty. The characteristic mental phenomena of mental "facility," loss of the highest and last acquired accomplishment, mental exaltation (usually of a benevolent type), extravagance, etc., are supplemented by motor physical signs which are pathognomonic ; *e.g.*, irregular, unequal pupils, not reacting to light, indistinct articulation with facial tremors, alteration of the deep reflexes, sometimes epileptiform fits, etc. But in other instances the diagnosis may be one of considerable difficulty and requires considerable caution, inasmuch as a correct verdict of general paralysis generally means that the patient will die within about three years, whilst the other conditions with which it may be confused are, some of them, curable. Savage[8] mentions some of the diseases which may be confused with general paralysis. Neurasthenia in a middle-aged man with a history of old syphilis is not unlike the early stage of general paralysis, but the simple neurasthenic will not show the pupillary changes, nor the other physical signs of general paralysis. Moreover the neurasthenic reacts promptly to the beneficial results of rest. Again, in an attack of mania, the mere restlessness, excitement, etc., have nothing characteristic about them, but the maniacal general paralytic is generally more easily led and persuaded to do things, and he is less resistive to suggestions. Moreover the maniacal stage of general paralysis is usually of much shorter duration than in ordinary acute mania, which generally lasts for several months. Again, in cases with symptoms of melancholia in a middle-aged man, we should carefully enquire for a history of previous attacks. If it is a first attack, and especially if the melancholia be of the hypochondriacal type, and if there be a syphilitic history, we should suspect general paralysis, and examine the pupils, reflexes, etc., with great care. Finally, the onset of epileptiform fits in a middle-aged man, without previous fits in infancy or youth, should always cause the physician to consider the possibility of general paralysis rather than simple epilepsy.

*Blood Changes in General Paralysis of the Insane.*—A study of the blood in cases of general paralysis of the insane is interesting when compared with that found in acute insanity (see above). Diefendorf[9] has recently published a series of repeated systematic observations in ten patients extending over a considerable portion of the disease. His results corroborate and amplify those already noted by previous observers. The chief points established are as follows :—dementia paralytica is accompanied by a moderate and progressive anæmia, involving especially the hæmoglobin, and becoming more marked as

the disease progresses. The terminal state of the disease is accompanied by a rise in the hæmoglobin and erythrocytes, and by a leucocytosis. Paralytic attacks are accompanied by a leucocytosis. Throughout the disease there is a pathological increase of polymorphonuclear leucocytes, which reaches its height during the terminal state.

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**INSOMNIA.** *Purves Stewart, M.A., M.D.*

In the treatment of sleeplessness, the first essential is to discover its cause. Insomnia may be "primary" or "secondary." Secondary insomnia is the term applied to those varieties of sleeplessness due to external stimuli, such as noise, physical pain, mental distress or excitement, cough, dyspepsia, fever, or any other source of peripheral irritation. The treatment consists in removal of the abnormal stimulus: *e.g.*, by relief of pain, arrest of cough, or of dyspnœa, etc.

"Primary" insomnia, on the other hand, is more difficult to treat, and may tax to the uttermost the physician's ingenuity and patience. It should be remembered that during sleep, the brain undergoes two great changes: Firstly, the cerebral vessels are contracted, whilst the peripheral vessels throughout the rest of the body are dilated, *i.e.*, the brain is anæmic; Secondly, the activity of the higher nerve cells is diminished. And cases of "primary" insomnia may be due to faults in either or both of these factors. Moreover excessive activity of cerebral cells tends to induce hyperæmia, and *vice versa.* Thus a vicious circle is formed and the insomnia tends to persist.

Certain cases of insomnia are *vascular* in origin, due to hyperæmia of the brain from loss of vascular tonus in its vessels. This, for example, is the main factor in anæmia, in tobacco and alcohol poisoning, and in the simple loss of elasticity which occurs in senile insomnia. Vascular insomnia is often associated with cold feet, and a hot bottle to the feet will often reduce the cerebral hyperæmia and induce sleep. Or one may dilate the abdominal vessels, and so divert blood from the brain, by the administration of easily digested foods, especially hot beef-tea or hot milk. This latter measure may be preceded, and its effect intensified, by the judicious employment either of the **Warm Full Bath** or of the **Cold Pack.**

The efficacy of the warm bath, followed immediately by a hot drink and, when necessary, by a hypnotic, is emphasized by Gorton.[1] The temperature of the bath should be 98° F., the patient should be immersed up to his neck, and he should remain in the bath from fifteen to twenty-five minutes, cerebral anæmia being further promoted by cold compresses round the head. This latter detail also prevents

vertigo. On leaving the bath, the patient must simply be wiped gently with a soft towel, not rubbed energetically. He is at once put to bed and given a hot drink, so hot that it can only be sipped. The **Cold Pack** may be substituted for the hot bath, and is equally efficacious. Here the patient is wrapped in a cold wet sheet, outside which are several blankets. Repeated cold compresses round the head serve, as in the hot bath, to diminish the cerebral hyperæmia still further. The patient generally falls asleep in the pack, and the usual duration is from one to two hours, or even longer.

Anæmic girls often complain of drowsiness during the day when they are in the erect position, *e.g.*, when sitting, whilst they have insomnia on lying down at night. This is because their toneless vessels dilate in the horizontal posture. In such cases **Digitalis**, by restoring the vascular tone, often induces sleep.

Other cases of primary insomnia are due to over-activity of nerve cells, *i.e.*, they are psychic in origin. The commonest cause of primary psychic insomnia is prolonged mental strain, worry, or over-work. Sudden shock, either joy or grief, may also produce the same result. It is in these psychic cases that pure hypnotics must be employed to act directly on the nerve cells. But it must be borne in mind that the action of all pure hypnotics is a toxic one on the nerve cells. They therefore require to be administered with care. The number of hypnotic drugs is legion, and every year adds to the list. The newest and most energetically advertised, needless to say, are not necessarily the best.

**Paraldehyde** in 1 or 2-drachm doses is one of the best and safest of hypnotics. It acts rapidly, usually within half an hour, and has no depressing after-effects. It has, unfortunately, a pungent taste and an odour which taints the patient's breath afterwards. This may be concealed to some extent by the addition of syrup of oranges. It does not tend to induce a habit. **Chloral Hydrate** as a hypnotic, and especially in combination with **Potassium Bromide** (20 grs. chloral to 30 grs. bromide) forms another very efficacious remedy, though much slower in action than paraldehyde, and there is not the same difficulty as with paraldehyde in getting patients to take it for successive days. **Sulphonal** in doses of 10 to 30 grains is a valuable drug, though somewhat slow in its action. It takes about an hour to produce sleep, and the patient is often drowsy for a whole day afterwards. Prolonged administration of sulphonal, however, tends to produce dangerous symptoms, of which the most serious is the well-known hæmatoporphyrinuria. **Trional** (15 to 30 grs.) acts more rapidly than sulphonal. All the above-mentioned drugs are well known. Amongst the more recent hypnotics which the writer has had opportunities of testing, may be mentioned **Hedonal** (15 to 30 grs.) which is rapid in action and produces five or seven hours' sleep; **Chloretone** (5 to 20 grs.), and **Chloralamide** (20 to 45 grs.), which are less reliable in their effects.

**Opium** and **Morphine,** as a rule, should be avoided, except in secondary insomnia due to pain. **Hyoscine** (gr. $\frac{1}{200}$ to $\frac{1}{100}$ hypodermically) is a powerful hypnotic acting on motor as well as sensory cells, controlling restlessness and inducing deep sleep. It is especially useful in the violent excitement of delirium tremens.

REFERENCE.—[1]*Med. Rec.* Feb. 20, 1904.

## INTESTINAL DISORDERS.

*Prof. C. A. Ewald, Berlin.*
(*Tr. by F. Gardiner, M.D.*)

The investigations of Schmidt and Strassburger[1] on intestinal disorders are of special interest. These observers have specially studied such conditions in order that, following the analogy of Ewald's test breakfast for stomach disorders, they might devise a similar *test meal for intestinal troubles.* The examination of such disorders would thus depend on the results shown by a simple uniform diet, and be essentially easier. The meal consists of 1·5 litres of milk, three eggs, 100 grams of biscuit, soup with 80 grams oatmeal, 20 grams butter, 20 grams sugar, 125 grams steak, and 250 grams mashed potato, and is given at least forty-eight hours prior to the examination, along with 0·3 gram of carmine for the purpose of estimating the stool. By this means the microscopic examination of the fæces is made easier, and a better knowledge of the affection of the bowel obtained, the stool being taken whenever it is stained red.

For the recognition of *inflammatory conditions* of the intestine, Schmidt and Strassburger's tests are as follows: (1) A readily carried out reaction for the presence of the colouring-matter of bile in the fæces; (2) The so-called fermentation test.

1. Bilirubin is known to be changed into hydro-bilirubin in the alimentary canal. Large amounts of unchanged bile colouring matter when found in the fæces indicate a catarrhal condition of the small intestine, shown by a too quick passage of its contents. Schmidt and Strassburger give the following directions for the demonstration of bile-pigment: A piece of the fæces about the size of a hazel-nut is put in a shallow glass dish, rubbed up with about 20 cc. of concentrated corrosive sublimate solution, and laid by for about twelve or twenty-four hours at body temperature. The hydro-bilirubin will be red, and the bilirubin, by oxidation, becomes green, so that a small green island can be noticed in an otherwise uniformly red mass. Under ordinary conditions this reaction does not appear, and thus green colouration proves the existence of an abnormally quickly-acting bowel; in other words a catarrh of the small intestine.

2. *The Fermentation Test.*—If hard or pulpy fæces diluted with water or fluid fæces are put into a "fermentation tube," the formation of gas frequently follows, sooner or later and more or less abundantly. The simplest plan is to use for the fermentation tube a strong test-tube with stopper, through which runs a U-shaped glass tube. The

test-tube is filled entirely with the fæcal solution, the stopper and U-tube firmly fixed on, the test-tube is inverted and deposited in a broad glass beaker, and the whole placed in a warm chamber. The gas produced collects in the upper part of the tube, while the fluid mass resulting flows out through the U-tube below, so that there is a ready means of measuring the gaseous volume.

Schmidt distinguishes an "early" and a "late" fermentation; the latter is produced more slowly, and is due, doubtless, to putrefaction. The "early" fermentation depends on the decomposition of the carbohydrates with the production of carbonic acid and hydrogen, these being present in greater amount the less the carbohydrates are altered in the intestine. When there is diminished change of the carbohydrates, we have an indication of disturbance of the lower part of the small intestine. Schmidt and Strassburger have designated this condition "intestinal fermentative dyspepsia," and they aver that anæmic and neurotic individuals are particularly subject to it. The patients complain of colic, borborygmi, flatulence, irregular stools (two to four times in the day), and tenderness on palpation of the abdomen. The fæces are moist, frothy, mixed with gas-bubbles, bright yellow in colour, and have a pronounced odour of butyric acid. The writer has, however, shown for the last two years[2] in his clinic of intestinal and peritoneal disorders that the diagnostic results of the fermentation test are not commensurate with the inconvenience and trouble it causes, for any considerable fermentation in the fæces can generally be recognized by the foamy nature and fluid character of the stools. These may be also microscopically examined, when numerous starch granules, turning blue by the iodine test, are noticed, these not being present in healthy fæces or in those from patients with other intestinal trouble.

The microscopic test is more certain, and also easier, than the "fermentation test." Basch[3], Kersbergen[4], and Philippsohn[5] agree on this point.

*Stenosis of the Intestine*, especially following tubercular ulcers and their sequelæ, have been more thoroughly discussed during the past year. Nikoljski[6] contends that too little account is taken of tubercular stenosis of the intestine. It is not only ulcers which by cicatrization can produce this condition (Corbin), but also those tubercular processes which from their beginning start sclerosing, and a third form—a hypertrophic tubercular stenosis—arising principally through the presence of fungous growths. Earlier opinions regarding the rarity of this condition are untenable, since the experience of surgeons has shown that many patients operated on for variously diagnosed affections reveal tubercular stenosis of the intestine at the time of operation. The clinical judgment is formed as much by the acute as by the gradually-increasing discomfort and the colicky pains in the first place; generally obstipation and diarrhœa guide us still

more. On examination, meteorism, gurgling, and almost certainly a tender tumour, are observed. According to Nikoljski the condition of the liver is important: if it has become unable to counteract the toxins arising in the intestine, then waxy disease ensues, and a condition resembling uræmia is present. Feverish symptoms seldom appear.

For the diagnosis of *multiple strictures* Schlesinger[7] considers the following points to be indispensable :—

1. Repeated observations; coils of distinctly separated intestine are found, between which is noticed a fixed portion scarcely palpable; (individual swellings of the single fixed intestinal segment make the diagnosis easier, but they are seldom noticeable.)

2. The localization of the pains over the stiffened intestine.

3. Gurgling of the intestine when the contraction disappears.

A further point to strengthen the diagnosis is :—

4. Indications of the existence of tuberculosis or syphilis.

Schlesinger operated on two cases, in which one showed three and the other twelve contracted places.

Ophuls[8] has systematically examined 22 *tubercular intestinal ulcers* with a view to the discovery of other micro-organisms, but was successful only in three cases. Otherwise the surface of the ulcers was always infected with numerous bacteria, partly bacilli varying in form and colour production, and partly cocci, none of which had apparently effect on the pathological result. He showed that generally tubercle settled in the lymphatic glands, from which it spread to the surface and produced the ulcers. In four cases ulcers were found without tubercle bacilli, and it remained a question whether this was due to the killing of the tubercular organisms in an old process, or whether the micro-organisms found were responsible for the condition.

The connection between *ulcers* of the large intestine and *nephritis* has been studied by Devic and Charvet[9]. They record 12 observations. The ulcers appeared either as simple hæmorrhagic infiltrations, or as follicular, that is to say, linear erosions, or as deep ulcerations, and one condition changes into the other. We must consider the toxins produced by the organisms as causative agents, in combination with vascular changes and disturbance of the circulation.

The much-debated question whether there is a *primary inflammation* of the cæcum, or a *typhlitis stercoralis*, has been decided recently by the researches of Feltz, Jordan, and Reisinger. Feltz[10] communicated a case in which there was perityphlitis and abscess formation in the neighbourhood of the cæcum, arising from a perforation of the wall of that organ. The wall was as thin as paper, and the whole cæcum filled with hard, brown fæces, whilst the appendix was absolutely intact. Jordan[11] operated on a case in which the clinical symptoms pointed to acute purulent circumscribed perityphlitis. He found the appendix intact (microscopical examination of the removed appendix), no free

exudation, and that a tumour had been produced by a matting together of the intestinal convolutions. On the back wall of the cæcum corresponding to the enlargement, there was thickening and infiltration. This part was resected, and on the mucosa of the resected coil a broad, flat ulcer was found. This had evidently had its origin from a long, narrow abrasion of the mucous membrane, which had been caused by accumulated fæces or a foreign body. The inflammation, infected by staphylococci, then spread through the intestinal wall. This case well demonstrates the occurrence of a primary typhlitis.

Reisinger[12] has also described two cases which show the occurrence of a primary typhlitis. Both cases bore the ordinary clinical features of a perityphlitis, and in both the appendix was found to be normal, so that they were evidently types of primary gangrenous typhlitis, arising from no other apparent cause than the accumulation of thick, hardened fæces. Reisinger also considered why such an accumulation occurs specially in the cæcum, and concludes that the reason is a mechanical one, in which the relation of the cæcum to the posterior wall of the abdomen is of importance. The weakest part of the intestinal wall is at the ascending colon, and at the cæcum, in which latter part the greatest expansion must take place. The stretching of the vessels takes place *pari passu* with the walls, and hence there is increased risk to the vitality of the intestine. Moreover, the posterior wall of the cæcum has no peritoneal covering, and therefore is less resistant than the rest of the circumference of the gut.

*Mucous Colitis* was discussed shortly in the *Medical Annual* of 1904, p. 243. It was not, however, made sufficiently prominent that there are two forms of mucous discharges: (1) A purely catarrhal mucous colitis; (2) A purely nervous, in which there is absence of catarrh of the mucous membrane, or in which it only appears as a sequela to the nervous condition. This last has been designated "myxoneurosis intestinalis" by Ewald[13]. In both conditions there is secretion of mucus, which assumes band-like or tubular appearances, in the first type as a secondary symptom, and in the second as a primary result of the nervous secretion. Both forms are accompanied by colic. There are many grounds for the belief in the nervous nature of this "myxoneurosis." It occurs with greatest frequency amongst women, and then in association with gynæcological conditions. It appears at the climacteric period and diminishes after this stage passes away. Stubborn obstipation of nervous origin (debility or spasm) is a frequent cause. There are also occasional cases where intercurrent nervous diarrhœa sets in (about 10 per cent of all the cases). In the same patient may be observed first a membranous enteritis which runs a normal course, and later a pure myxoneurosis, which lasts for years, whilst in rare cases diarrhœa and constipation may alternate. The simultaneous occurrence of nervous gastric achylia and myxoneurosis,

observed by Einhorn and myself, or the combination with nervous dyspepsia and with enteroptosis, likewise indicate the nervous nature of the trouble. In many cases this mucous colitis must be considered as only a symptom of a general neurosis.

Often the mucous discharge is accompanied with no special symptoms, and at times other nervous affections so predominate that only by accident is the membrane in the stool observed by the patient. Among these special symptoms are unpleasant feelings in the abdomen, which are confined to no special place, but are distinctly painful and, especially on pressure, one can elicit a painful spot in the region of the sigmoid flexure or the ileo-cœcal valve. In many cases there is great hyperæsthesia over the sigmoid flexure; also enlargement and tenderness of the liver on pressure, headache, disturbance of the functions of the stomach, palpitation of the heart, arrythmia of the pulse, and even instances of angina pectoris have been noticed (Botentuit). In my experience there is no proof of a relationship between myxoneurosis of the intestine, and appendicitis, as has been claimed by Reclus and others. In the latter condition there are generally regular or intermittent and more or less violent colicky pains. These appear at times suddenly, at other times gradually, and are generally situated on the left side of the abdomen, sometimes spreading diffusely over the liver. Unpleasant feelings in the bladder, and shooting pains down the thighs are also common. An obstinate obstruction of the bowels is the rule. The mucous mass passes out either immediately with the stool, or follows immediately thereafter. At times only by straining at stool can the piece of mucous membrane be discharged. The cases accompanied by colic, especially if at the same time a febrile intestinal catarrh sets in or is present, bear a certain resemblance to dysentery, and even to typhoid (Mathieu), yet one can easily avoid such a wrong diagnosis. In the earlier stage the appearances can be mistaken for perityphlitis (Solis Cohen), or may simulate biliary colic if the onset is sudden and the pains are apparently situated in the right abdominal region (the so-called early form, which occurs without jaundice or tumour of the gall-bladder).

Treatment.—Mild vegetable **Aperients** (linseed, senna, castor oil, etc.) astringent infusions of **Tannin, Bismuth, Silver Nitrate** (Clemm[14]) are recommended in myxoneurosis. Others consider that the chief point of internal treatment lies in the direction of **Diet.** In my experience aperients are satisfactory only for a short time, as they require to be given in continually larger doses or they do not remove the membranous deposit. **Oil Enemata** as recommended by Kussmaul are preferable; 300 or at most 500 grams of olive, sesame, or linseed oil are injected in a warm state while the patient lies on his left side. It is important to use a rubber syringe, and not a hard nozzle, and to express the contents of the syringe gently. The patient remains on his

left side for ten minutes, it being important to retain the oil as long as possible. This is aided by injecting a soothing and astringent fluid, say about 3 to 5 grs. of **Bismuth Subnitrate**, or better, **Bismutose**, which is mixed thoroughly with the oil. A mild laxative is only given if there is no evacuation, or an insufficent one, after the enema.

As regards diet, so many cases of myxoneurosis of the intestine are accompanied by severe obstipation, that the food must, under these circumstances, be aperient in character. All cases cannot be treated alike: each must be judged separately as it appears. In obstipation which arises from simple sluggishness of the bowels (primary muscular weakness of the intestine, or secondary disturbances of innervation, neurasthenic or hysterical in their origin) the diet will be arranged quite otherwise than in cases showing nervous spastic conditions or direct mechanical obstruction from the uterus or its adnexa. Such a dietary is made chiefly from the following: Rough bread (black bread, "Grahambrot," and rye bread), fat (butter, cream, and lard), salad with oil, fatty sauces, shell fruit, green vegetables, rich milk with much sugar, fruit syrups (fig syrup), marmalade, dried plums, fruit soups, and fresh fruit of all kinds, more especially seeded fruits and nuts. Such a diet gives rise to acid and gaseous products which stimulate peristalsis. It is a matter of indifference whether such a régime be begun suddenly (V. Noorden and Dapper[15]), or by slow degrees. Frequently mineral waters must be added, and massage, electricity, and gymnastics; and especially recourse should be had to hydro-therapeutics.

Cases in which there is disturbance of the stomach functions, and cases of spastic obstipation, are not suited for such a diet, which increases rather than allays spasm. Here the condition should be treated, if the nature of the obstipation is thoroughly recognized, with small doses of **Opium** or **Belladonna**, internally by the mouth, or in **Suppositories** in combination with soothing fluids (oil, infusion of chamomile flowers, etc); these often have a surprising effect.

Botentuit[16] has, in cases rejecting a prompt prescription of diet for obstipation, contented himself by using a mildly aperient diet. Robin[17] considers entero-colitis to be an intestinal complication following on nervous irritation (hyperæsthesia) or fermentation of the stomach. Under the influence of the hyperacidity of the stomach, spasm of the pylorus is set up with its results. The excessively acid chyme cannot be neutralized by the alkaline intestinal secretion, bile, and pancreatic fluid, and so irritation of the intestine is produced, mucus is secreted, and gradually inflammatory reaction sets in at some susceptible region in the descending or ascending colon. Treatment must therefore be by alkaline medicines, in opposition to the views of modern German authors, and a diet is ordered which is as soothing as possible and not liable to ferment.

According to the observations of Bernhard[18] the complications of

diarrhœa and membranous enteritis with *Graves's disease*, are not uncommon. Of 5 cases (women), 4 had at the same time enteroptosis or nephroptosis, and 3 suffered from intestinal gravel. Constipation was the general rule, and only once was there diarrhœa, the membranous catarrh of the intestine in these cases being a symptom of disease of the sympathetic nerves in the abdomen, which may arise from any trouble, whether primarily local or central.

For the treatment of severe cases of ulcerative colitis and dysentery, the ulceration may necessitate the production of a high **Artificial Anus.** Through the fistulous opening, daily injections of astringents and disinfectants (bismuth and iodoform) can be introduced. Vogel[19], Parenchos[20], Boas[21], all give detailed good results.

Sir Lauder Brunton[22] orders for the treatment of *dysentery*, **Castor Oil** and full doses of **Ipecacuanha** (2·0 grams of pulv. ipecac.). **Opium** is very beneficial for the excessive pain so often present. Change of air—absolute abandonment of the country where the disease is endemic—do much to complete the cure. For painful rectal ulcers, a daily local application of **Calomel Ointment,** and afterwards a **Bismuth and Morphia** ointment, are of great value.

*Prolapse* of the rectal mucous membrane, frequent in children, is rare in adults, but sometimes in them a prolapse of the mucosa of the *sigmoid flexure* is observed. The chief symptoms are diarrhœa, discharge of blood and mucus, constant straining at stool through the irritation of the invaginated part, which can at times be reached by the finger. Treatment is local, by **Cold-water Douches** and similar remedies.

Fingland[23] extols the use of **Aplopappus Baylahnen** (an Australian drug) in cases of sporadic dysentery, whilst Douglas[24] has obtained his best results in South African dysentery by large doses of **Sulphur.** He gives 1 to 1·5 grams every quarter hour with 0·25 gram of **Dover's Powder,** coupled with rest in bed and a suitable diet.

The practical results of **Serum-therapy** in dysentery are still in doubt. Kruse[25], however, states that he has succeeded in experiments on guinea-pigs. These, when infected with the bacillus of dysentery, died after seven to ten days, but when the blood-serum treatment was adopted and injections used on the third day, they recovered. When the blood-serum of a healthy man was inoculated with dysenteric bacilli, and to this mixture a trace, say about $\frac{1}{1000}$th part, of dysenteric serum was added, the bacilli in a few hours, instead of growing and multiplying, were observed to modify their normal form and appearance, to become swollen, and finally to dissolve, leaving only a few granular remains.

*Ankylostomiasis* has lately been frequently observed in England (Baker[26]); it is therefore interesting to record the experience of Nagel[27] at the Elizabeth Hospital in Bochum, where during the last year he has treated about 4000 cases of that condition with various

remedies. Unpleasant symptoms, such as headache, fainting, and rise of temperature up to 39·5° (R.), occasionally follow the giving of 10 to 13 grs. of **Ext. Filicis.** In bad cases there appear passing disturbances. The patient lies bathed in perspiration, with wide, staring pupils, and in such cases **Phenacetin** or **Salipyrin** have proved very useful. In one case, of a healthy man without secondary anæmic symptoms, a single dose of 10 grams of ext. filicis was followed pretty quickly by total amaurosis, with dilated pupils and advancing atrophy of the optic nerve. Soon after, similar untoward results followed the exhibition of two doses of 5 grams. **Thymol** must be given in doses of at least 8 grams, and is not more reliable than ext. filicis, in fact possibly less so, and not free from the risk of producing symptoms of poisoning. **Filmaron**, extracted from ext. filicis, was tried in 9 cases, and with encouraging results (filmaron 0·7, chloroform 1·5, ol. ricini 20).

Schulhoff[28] reports a remarkable case of *stoppage of the bowels* through *ascarides*, in which laparotomy was performed on a woman for the relief of ileus. The greater part of the coils of intestine were contracted to the size of the little finger, and in active peristaltic motion. In these coils were observed numerous white, spiral, shining swellings. The lumen of the contracted intestine gradually widened at both the duodenal and cæcal ends. No direct obstruction being found, the abdominal wound was closed. Symptoms of choking suddenly appeared, and two ascarides lumbricoides were vomited up by the patient. On the following day three more worms were vomited, in the evening flatus was passed, and two hours later there was a motion of the bowels containing three ascarides. After that there were regular stools, and in all twenty-two worms were passed. Complete cure followed. The affected individual had lived entirely on vegetables. Her whole family suffered from these worms, which were vomited every time they drank sweet "schnaps." This had also happened in the case of the woman who was under observation.

Injections of **Atropine** for *strangulation of the bowels* continue to be employed. Kohlhaas[29] orders it for all cases of spastic paralytic strangulation and for invagination. The invaginated piece of the intestine sets up a severe irritation of the containing piece, which then grasps the intussusceptum more firmly. At the same time obstruction of the circulation and swelling of the invaginated part is produced, rendering the removal of the intussusception more difficult. It is clear that atropine, by allaying the spasmodic irritation, must exercise a favourable influence.

Hamburger[30] has studied the apparently paradoxical effect of atropine in *paralytic ileus*—results after injection of 1 to 2 mgrams. He finds that the intestine as a whole is relaxed or otherwise contracted *in toto*. If the intestine is then in a position to contract on its contents, then a closure of the canal results. The atropine relieves the fixed

paralytic contraction of the intestine, and by its toxic effect produces momentary activity, and thus the contents receive the necessary propulsion.

Bosch[31] also, in a case of mechanical obstruction of the intestine caused by an intra-abdominal tumour, cured the obstruction on two occasions by injections of 4 mgrams of atropine. The great danger in all these cases, however, is that the right moment for successful operation may be lost by using the injection. From the first these injections are useless in cases such as recorded by Brignole[32]. A woman, fifty years of age, had suffered since childhood from constipation, and for a month on this occasion had no movement of the bowels. Per vaginam and per rectum a stony hard mass was felt, producing apparently a complete blockage of the lower segment of the intestine. The complete collapse of the patient called for immediate laparotomy, when the entire abdominal cavity from the liver to the sigmoid flexure was found to be filled with enormously distended coils of intestine, which immediately protruded into the abdominal incision. There was observed a twisting of the sigmoid flexure on its long axis, combined with great expansion of the whole large intestine, which made the condition a fixture. After some difficulty the twisting was relieved and an intestinal tube introduced, when a large amount of gas escaped. The intestine was then stitched to a linear furrow on the abdominal wall, and cure ensued. The widened intestine showed a markedly thickened wall, but whether this hypertrophy (ektasie) was congenital or acquired it is impossible to say.

In the *Medical Annual*, 1904, pp. 2, 31, a new aperient, **Purgen**, was recorded. Here we must mention **Exodin**, an oxyanthroquinone derivative employed by Ebstein[33]. The dose is 0·5 gram for children and 1·0 to 1·5 grams for adults. After eight to ten hours a painless, soft motion is produced, without any irritation of the stomach, eructations, or other undesirable effects. It is an odourless, tasteless powder, insoluble in water. Finally may be mentioned the noteworthy remarks of Harrington[34] in a discussion of the mechanical and surgical treatment of constipation. He says, "Good surgery is the degree of benefit afforded the patient by the operation, and not the ability to perform successfully the work undertaken."

In the Massachusetts General Hospital in Boston from 1890 to 1900 there was a total of 77 cases of *cancer of the intestine* operated on by various surgeons. Thirty-six per cent died in the first week, 19 per cent in one to four weeks, 18 per cent within the first half-year, 5 per cent between six and twelve months, 11 per cent between one and two years, 5 per cent between two and three years, and 3 per cent are still alive. Thus, less than 30 per cent lived longer than six months after operation.

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**INTESTINE** (**Surgery of**). *A. W. Mayo Robson, F.R.C.S.*

Cases of surgical exclusion of the intestine have been recorded from time to time, but a recent case described by Vanverts is remarkable on account of the extent of the excluded portion. The patient was a woman upon whom hysterectomy was performed. There were extensive adhesions, the freeing of which resulted in rupture of the intestine with subsequent formation of a fæcal fistula. The patient rapidly became emaciated. On account of this, a second operation was performed, which showed that the artificial anus was placed about ten inches below the duodeno-jejunal junction. An anastomosis was made between the jejunum and transverse colon, thus excluding the greater part of the jejunum, the ileum and ascending colon, and half the transverse colon. The patient regained her health, though the fistula still remained open. Legneu[1] notes that this is the most remarkable case of intestinal exclusion on record, since the patient not only survived, but gained ten pounds in six months with not more than three feet of "acting" intestine. I have excluded a considerable portion of the ileum and the ascending colon for extensive tubercular ulceration, by anastomosing the upper part of the ileum to the transverse colon, with complete restoration to health, and have also successfully short-circuited extensive portions of the small intestine for fæcal fistula, but so far as I know Vanverts' case is unique in the extent of the exclusion.

In severe constipation Arbuthnot Lane[2] advocates and has practised successfully, exclusion of the large intestine.

In the Erasmus Wilson lectures on acute, infective, gangrenous processes of the alimentary tract, E. M. Corner[2] states: To sum up the chief points which an examination of the records of examples of obstruction of the mesenteric vessels has shown, the following tables may be formed:—

### Clinical Table.

1. It is most common in men past middle life.

2. It is most common secondary to valvular disease of the heart, especially mitral disease.

3. The onset is generally sudden, with symptoms of peritonism.

4. In one class the picture is one of intestinal obstruction, or peritonitis due to appendicitis, or the perforation of a gastric ulcer.

5. There is also another class in which blood is passed per rectum, and which signifies infarction of the bowel.

6. Subacute and chronic cases are seen as well as the most acute.

7. In some cases it is most probably spontaneously recoverable from, especially if only a small area of the bowel is rendered bloodless.

### Pathological Table.

1. For a constant situation of the embolus in the superior mesenteric artery as in the main trunk, all varieties of clinical cases have been reported, from the most acute and fulminating to cases like Professor Chiene's, that recovered apparently without obvious symptoms.

2. With a precisely similar lesion, some subjects die in thirty hours, and some not till from twelve to twenty days.

3. Gangrene of the gut has been noticed to occur within thirty hours, and sometimes not after twenty-two days.

4. A collateral circulation can be formed in slowly developing cases of visceral vascular obstruction, *e.g.*, Professor Chiene's case. And even in more acute instances an attempt at a collateral circulation is made.

5. The superior mesenteric artery is almost invariably picked out for the site of the embolus in fatal cases, possibly because it will always cause symptoms, and almost always death, which need not occur with involvement of the inferior mesenteric and its branches or those of the cœliac axis.

6. The explanation of the individual variations, clinical and pathological, seems to depend upon the pathogenicity of the bacteria present in the gut as to the severity, rapidity, or other characters of the cases. On the bacteriology of this affection there is no work done.

[The last two sections of this lecture dealt with the subjects of "Thrombosis of the Mesenterial Vessels or Strangulated Hernia" and "Wounds and Surgery of the Mesentery," in so far as they illustrated the relationship which exists between the integrity of the bowel wall and interference with its blood-supply.]

Several successful cases of treatment of inflammatory diseases of the large intestine by appendicectomy or cæcostomy have been recorded by Meyer Lilienthal, Dawbarn and others. The method suggested by Weir is usually employed. The appendix is brought up to the surface of the skin and secured there. It is afterwards opened, and by means of a catheter passed through its lumen the large intestine is thoroughly flushed.

Haggard[3], in a review of 295 cases of perforation of the intestine in typhoid fever, showed that 80 patients, or 27·11 per cent, recovered. The death-rate in cases of perforation, not submitted to operation, is given by Murchison as between 90 and 95 per cent. Osler says

he could not recall a single case in his experience that had recovered after perforation had occurred, without operation. With regard to the technique of the operation. Haggard points out that inasmuch as the actual site of perforation is near the ileocæcal valve, the right iliac incision should be chosen, but in cases of general peritonitis a central incision is better. The ulcer, when found, may be trimmed or excised, or simple inversion may be performed. Care should be taken not to cut off too much of the circulation when the ulcer is situated near the mesentery. Search should be made for other perforations, and any thinned areas inverted by suture. Resection may be practised if there is much destruction, but the formation of an artificial anus is best in the majority of cases in greatly debilitated subjects. Copious irrigation is essential in extravasation or general peritonitis, but sponging out is better in localized and walled-off areas. Drainage by the vagina is preferable in women. He recommends Fowler's method of sitting the patient up at an angle of 40 degrees, so as to prevent infection of the diaphragmatic area.

Elsberg[4], in discussing perforation of the intestine in typhoid fever in children, shows that perforation is very nearly as frequent in children between the ages of six and fifteen years, as in adults. The symptoms do not differ essentially from those of adults. Although recovery may, in exceptional cases, take place without operation, the treatment should be surgical as soon as the diagnosis has been made. The prognosis after operation is more than twice as good in children as in adults, and very early operative interference offers the best chance for recovery.

The **Elastic Ligature** method of **Intestine Anastomosis** suggested by McGraw, has been tested by numerous observers. This new method is simple enough. The two viscera are brought together, and the surgeon connects them with a single line of Lembert sutures a little longer than the desired opening. The rubber cord is then, by means of a large needle, passed through the walls of first one and then the other bowel, and tied firmly in a single knot. Before tying it, however, a silk thread is laid under the knot, and after the knot has been firmly tied with the rubber stretched to its utmost, the silk thread is made to fasten it in place. Both threads are then cut short, and the Lembert suture is now completed so as to form a ring enclosing the rubber. Besides simplicity and quickness of application, this method has the advantage that no extravasation is possible, since the rubber completely fills the openings through which it passes. Also the delay in opening the passage until the intestines have become well glued together, tends towards the prevention of sepsis. Not the least of the good points is the ability to make with this procedure a communication of any desired length.

Murphy[5] concludes from his experiments on animals, that a successful anastomosis between the stomach and intestines, or two loops of

intestine, is possible by means of the elastic ligature. The method is not applicable when an immediate opening is required. The time of the cut-out varies, depending upon the character of the ligature, the method of application, and the resistance of the tissues in any case, but the ligature will ultimately cut out. The pinching of the gut by the ligature seems to cause no bad symptoms. The anastomosis by either gross or microscopical examination shows no evidence of any greater tendency to contraction of the opening than with the ordinary methods of intestinal suture. The procedure causes a minimum operative risk, both as regards shock and infection. Adhesions across the opening are a possible, but not a probable complication. Kakels[6] states that this method, barring the disadvantages caused by its slow action in cutting through, is far superior to all others for simplicity, rapidity and efficiency. He suggests that for man, in order to obtain a free opening within three or four days, it would be much safer to use a ligature of three or four mms. thickness, even if it makes a clumsy knot, and that an inch and a half of tissue at least should be included in the ligature.

Some new methods of **Anastomosis** have been brought forward during the past year. Hepperlen[7] has devised a modification of Halsted's method. Instead of an inflated rubber cylinder in the bowel over which to stitch, a gelatin cylinder is employed. This serves as a firmer support, takes a very short time to introduce, and when the work is completed, absorbs, leaving no after trouble.

A new method of *circular* anastomosis is described by Campbell[8]. A knife is passed through the mesentery and made to encircle the bowel, cutting through the serosa and muscularis. A cuff of serosa and muscularis five cms. in length, with the mesentery, is rolled back by means of gauze dissection on the distal portion of the bowel, which is well protected by gauze. The bowel thus denuded is severed at its distal end within one cm. of the cuff. At the proximal end it is severed flush with the primary incision. The proximal end of the bowel is then united to the denuded stump at the distal end. The cuff is now rolled over the site of union on to the proximal end of the bowel, and made secure by sutures placed through the mesentery and in the intestinal wall. No leakage can occur, as plastic lymph agglutinates the cuff to the serosa of the proximal end of the intestine.

References.—[1]*Rev. Chir.* 1903; [2]*Lancet*, Dec. 17, 1904; [3]*Ibid*, May 4, 1904; [4]*Med. Rec.* July 16, 1904; [5]*Ann. Surg.* July, 1903; [6]*Boston Med. and Surg. Jour.* Jan. 28, 1904; [7]*Med. Rec.* Aug. 1903; [8]*West. Med. Rev.* Sept. 1903; [9]*Jour. Amer. Med. Assoc.* May, 1903.

**INTUBATION.** (*See* Larynx, Stenosis of).

**JAUNDICE.** *Robt. Hutchison, M.D.*

Dr. Sidney Phillips[1] points out that most, if not all cases of jaundice, appear to be "obstructive," the obstruction being in some in the common duct, and in others in the small intra-hepatic ducts. If the

use of the terms "obstructive" and "non-obstructive" is still to be retained, it should refer only to the presence or absence of obstruction in the common duct. Whatever terms are used, the first step in the diagnosis is to determine whether or not there is obstruction in the common bile-duct. Such obstruction is shown by (1) Absence of bile from the stools; (2) Enlargement of the gall-bladder; and (3) Enlargement of the liver.

1. Absence of bile from the stools is the most trustworthy; the other two conditions are confirmatory signs. When the stools are white in cases of jaundice, the common bile-duct is obstructed. When they are not white there is no such obstruction. Walker[2] points out that the motions may become colourless from defective pancreatic secretion; in these cases, however, there is no jaundice.

2. Enlargement of the gall-bladder arises from its distension when the common duct is occluded. It may be too slight to be detected at first, but in long-standing cases, and where the occlusion is complete, it may become enormous, and generally can readily be felt through the abdominal wall.

3. Enlargement of the liver arises whenever the exit of secreted bile is prevented. The amount of enlargement varies with the duration of the obstruction, and in different individuals. It may appear to be greater than it really is, from pushing forwards of the liver by the distended gall-bladder. The enlargement may be so great that doubt may arise as to whether it is not due to primary disease of the liver, but if the surface of the organ is smooth, and no nodules can be felt in the substance, no degree of enlargement need deter us from regarding it as due to, and confirmatory of, obstruction of the common duct.

The causes of obstruction in the common duct giving rise to jaundice are: (1) Catarrhal obstruction; (2) Duodenal ulcer; (3) Duodenal cancer; (4) Stricture of the duct; (5) Foreign bodies in the common duct, as biliary calculi, pancreatic calculi, and parasitic structures; (6) Pressure from without by perihepatitis and resulting adhesions; (7) By tumours in the portal fissure; and (8) By disease of the pancreas.

1. *Jaundice from Catarrhal Obstruction of the common Bile-duct.*—Catarrh involving the orifice of the bile-duct in the duodenum prevents bile from flowing into the intestine, and jaundice results. When jaundice comes on rapidly with white stools, with slight enlargement and tenderness of the gall-bladder and liver, but without pain or ascites, the probability is that the jaundice is due to catarrh, especially if there have been precedent symptoms of gastro-duodenal indigestion (nausea, flatulence, etc.), with or without evidences of rheumatism, gout, or secondary syphilis. The diagnosis of catarrhal jaundice is not based on any special distinctive symptom, but rather on the known frequency of its occurrence, together with absence of evidence of any other condition which could produce jaundice. Catarrhal jaundice rarely lasts more than five or six weeks, but during

this time the gall-bladder may become considerably distended, and the patient may become very deeply jaundiced and emaciated. If the jaundice does not commence to lessen after the lapse of five or six weeks, and bile to reappear in the stools, the diagnosis of simple catarrh must be abandoned, the probability being that some more serious condition, such as disease of the pancreas, is present.

2. *Jaundice from Duodenal Ulcer* can only arise when the ulcer involves the opening of the common duct in the duodenum ; it is therefore rare. Jaundice with white stools and no ascites, coming on after the patient has suffered for some time from epigastric pain and tenderness, with hæmatemesis or melæna, is ascribable to duodenal ulcer. (The same symptoms may result from cancer of the pancreas, but then the jaundice usually precedes any hæmorrhages, and possibly the tumour of the pancreas can be felt.)

3. *Jaundice from Duodenal Cancer.*—If, in addition to the symptoms of duodenal ulcer just enumerated, a tumour can be felt in the duodenal region, or if the lymphatic glands in the abdomen, neck, or elsewhere are enlarged, the jaundice is probably due to duodenal cancer. (Cancer of the head of the pancreas is even more difficult to exclude here than in the case of simple duodenal ulcer, but in cancer of the pancreas the jaundice usually precedes the melæna, and there may be other evidences of pancreatic cancer, such as will be described later.)

4. *Stricture of the Duct.*—Jaundice coming on at birth with absence of bile from the stools, is ascribable to congenital stricture of the duct, and is soon fatal.

5. *Jaundice from Calculi or other Foreign Bodies in the common Bile-duct.*—When jaundice, with white stools and enlargement and tenderness of the gall-bladder and liver, comes on a few hours after a paroxysm of acute abdominal colic, with retching or vomiting, and perhaps pyrexia, such jaundice is generally due to a foreign body in the common bile-duct, and in the absence of evidence of hydatids of the liver, such foreign body is presumably a biliary calculus. A pancreatic calculus impacted at the orifice of the common bile-duct may produce almost identical symptoms, though probably with less severe pain. Jaundice must not be ascribed to impacted gall-stone, unless there has been an attack of colic at some time ; for though a calculus may become impacted in the duct without an *immediately* preceding attack of pain, yet it is excessively rare for a stone to become so impacted unless calculi have entered the biliary passages and produced colic at some previous date—it may be long before. Jaundice must not be too readily attributed to gall-stones, if the evidences of their existence occurred at some long previous date, for such jaundice may be due to cancer of the liver or pancreas, which are not infrequently preceded by calculi in the biliary ducts.

6. *Compression of the Duct by Perihepatitis with Adhesions.*—Perihepatitis seldom occurs as a disease alone, but is met with in association

with hepatitis (especially syphilitic hepatitis), with growths in the liver or portal fissure, with gall-stones in the biliary passages, or with gastric or duodenal ulcer. As the vena portæ as well as the duct may be compressed by the perihepatic bands, ascites is often produced as well as jaundice. When jaundice occurs without bile in the stools, but with ascites, paroxysmal attacks of local pain and pyrexia, together with evidences of some of the conditions above enumerated with which perihepatitis is usually associated, we are justified in attributing it to perihepatitis. When similar symptoms occur, but without ascites, the diagnosis is more difficult, the main difficulty being to decide whether the symptoms are due to gall-stones or to perihepatitis, for both give attacks of pyrexia, local pain, and jaundice with colourless stools. The more severe the attacks of pain, and the more intense the jaundice, the greater the probability of calculi; but very often perihepatitis and gall-stones co-exist, and many of the symptoms met with in cases of gall-stones are due to associated perihepatitis.

7. *Jaundice from Compression of the Bile-duct by Tumours in Portal Fissure.*—Any tumour pressing on the common bile-duct sufficiently to occlude it, will press also upon the adjacent vena portæ; hence in such cases there is always ascites as well as jaundice. If a tumour can be detected in the region of the portal fissure, and there is ascites as well as jaundice, with colourless stools, there need be no hesitation in ascribing the jaundice to the presence of the tumour. When the same symptoms occur without any tumour being detectable, but nodules of carcinoma can be felt in the liver, we may infer that the jaundice results from pressure on the bile-duct by glands in the portal fissure, secondarily affected. The physician should never attribute jaundice with colourless stools, but without ascites, to cancer of the liver. Cancer of the liver does not itself press upon the bile-duct (except in very rare instances) and any obstruction of the bile-duct in cases of cancer of the liver is produced by pressure of secondarily affected glands in the portal fissure, which are certain to produce ascites if they produce jaundice. Even if nodules of carcinoma can be felt in the liver, jaundice with white stools is not to be ascribed to that disease, unless there be also ascites, but is probably the result of cancer of some other organ, such as the pancreas, to which the nodules in the liver are secondary.

8. *Jaundice from Disease of the Pancreas* is more common than might be inferred from the little stress until recently laid upon it. From the anatomical position of the gland, tumours or enlargements of the head of the pancreas, unlike other tumours or enlarged glands in the portal fissure, can press upon and occlude the common bile-duct without compressing the vena portæ. Hence disease of the pancreas is capable of producing jaundice with colourless stools but without ascites—symptoms closely resembling those producible by gall-stones, but distinguishable from them by the absence of severe colic. When

jaundice comes on, either slowly or quickly, with white stools, without pain, or if with pain without the acute paroxysm of biliary colic or of perihepatitis, and without the indications already described of duodenal ulcer or cancer, the jaundice is due either to disease of the pancreas or to catarrh of the common duct. If a tumour can be felt in the position of the head of the pancreas, catarrh is excluded. Pain, too, would also exclude mere catarrh. If there is no tumour and no pain, the diagnosis between catarrh and pancreatic disease is impossible for the time, but if the jaundice persists for over six weeks, the presumption becomes great that it is not due to simple catarrh, and is in all probability a result of disease of the pancreas. Confirmatory evidences of pancreatic disease may be present.

The enlargement of the gall-bladder which results from pancreatic, as from all other forms of obstruction of the common duct, is apt to be more marked in pancreatic growths than from other causes, such as gall-stones, for the obstruction from pancreatic disease is often more absolute than from gall-stones, and again, the latter often set up inflammatory adhesions about the gall-bladder which limit its distension. Bard and Pic[3] deny that enlargement of the liver occurs in cases of pancreatic obstruction of the duct, but Chopin and Molle[4] have shown that the liver may enlarge in this as in all other forms of obstruction of the common duct, and the post-mortem examinations in some of my own cases have shown that the liver may become of enormous size. In late stages there are often secondary nodules of cancer in the liver. Ascites is more often absent than present, but may arise in the late stages of pancreatic disease. A tumour may be sometimes felt, but a small growth in the head of the pancreas quite incapable of being felt through the abdominal wall, may produce jaundice. In 3 of 12 cases of pancreatic growth, no tumour could be felt. Fat in the stools sometimes occurs. Œdema of the feet without ascites may result from pressure on the inferior *vena cava*. Pain is usually, but not always, felt ; it was absent in 3 of 12 cases. Melæna is not infrequent—it occurred in 4 of 12 cases ; in one, the disease had ulcerated into the duodenum. Secondary growths may occur in the skin or in the mediastinum (2 cases). Glycosuria appears to be most common in non-malignant cases, but it may occur in carcinoma of the pancreas, as in a case recorded by Shaw and Perry. It is said that pancreatic obstruction prevents carboluria when salol is administered by the mouth. In one case with presumably cancer of the pancreas, salol produced carboluria immediately, and subsequently necropsy showed obstruction by such a cancer. This, and other cases of proved pancreatic obstruction, have shown that the administration of salol is worthless as a test of it.

The statement has been made that cancer of the pancreas, unlike cancer of the liver, does not appear to be predisposed to by calculi in the biliary passages, but in 2 of my 12 cases pancreatic cancer, as well

as biliary calculi, were found *post-mortem*, and in a case recorded by Shaw and Perry there was evidence of the same association. A previous history of gall-stones, therefore, in no way militates against the diagnosis of pancreatic cancer as a cause of jaundice. The nature of the disease of the pancreas suspected to be the cause of jaundice must be adjudged on the grounds which guide us generally, any solid tumour detectable in the position of the pancreas, or any enlargement of cervical lymphatic glands, pointing to malignancy.

*Jaundice without Obstruction in the common Bile-duct* occurs in many conditions, and for reasons not well understood. That it is due to a failure of the liver to secrete bile, is disproved by the fact that when the liver fails to secrete bile, no bile is secreted, and therefore no jaundice results. The theory that the jaundice is a result of excessive absorption of bile from the intestines has also been disproved. In many cases the jaundice appears to be due to absorption from the small intrahepatic ducts of the bile which have become more or less stagnant owing to a catarrhal condition of the epithelium lining these ducts, set up by some poison in the blood. No explanation, however, quite satisfactorily accounts for the appearance of jaundice in all the conditions in which it occurs. They may be enumerated as follows: (1) Poisons circulating in the blood, such as phosphorus, toluylendiamin, etc.; (2) Toxins resulting from certain diseases—yellow fever, the exanthemata, pyæmia, etc.; (3) Congestion of the liver; (4) Hepatitis; (5) Acute atrophy of the liver; and (6) Conditions of the nervous system.

*Jaundice from Poisons.*—Though we cannot satisfactorily account for the mode of causation, we may set down jaundice as due to phosphorus poisoning, if there is evidence that this substance has been taken.

*Jaundice resulting from Yellow Fever, etc.*—When jaundice occurs in the course of any of the diseases already enumerated, we may similarly attribute the jaundice to the toxins of the disease.

*Jaundice from Congestion of the Liver.*—When there is jaundice with bile in the stools, and the liver becomes enlarged and tender, with perhaps nausea or vomiting, we may infer that the jaundice is due to congestion of the liver, especially if it occurs in a tropical district.

*Jaundice from Hepatitis.*—When the liver is much enlarged, and smooth or "hobnailed" on its surface, or is much contracted, and especially if there are evidences of alcoholism, such as morning retching, with or without signs of portal obstruction, any jaundice which occurs with presence of bile in the stools may be set down as due to the cirrhosis, and is, indeed, a confirmatory evidence of it. The form of cirrhosis in which jaundice is most common, is the unilobular form, with a large smooth liver and no ascites, but it may occur in the large liver with ascites, or in cases where the liver is contracted with or without ascites. Probably in most of such cases the jaundice is due to a catarrhal state of the small ducts.

REFERENCES.—[1]*Lancet*, June 27, 1903; [2]*Trans. Roy. Med. and Chir. Soc.* vol. lxii, p. 257; [3]*Rev. de Méd.* 1888; [4]*Loire Méd.* 1893.

**JAUNDICE (Infectious).** *J. W. W. Stephens, M.D.*

Sandwith[1] defines the disease as seen by him in Egypt, as "an acute infectious disease sometimes becoming epidemic during the summer months, characterized by fever, jaundice, enlarged liver and spleen, nephritis, and some liver symptoms. It is not contagious, but one attack seems to confer immunity." After the incubation period of one to two days the onset is sudden, with a rigor, pains, and vomiting. About the third day the jaundice sets in, with marked enlargement and tenderness of the liver, enlargement of the spleen, albuminuria. These symptoms gradually disappear, but about the third week there is a secondary fever lasting a few days. Epistaxis and intestinal hæmorrhage are common, hæmaturia rare. Petechiæ on the skin are frequently seen. The average death-rate is 32 per cent. *Post-mortem*, the most noticeable changes are petechiæ of the serous membranes of the stomach, and sometimes of the ileum and colon. The question is raised as to its identity with Weil's disease. The latter differs from it in its mild character, and in the fact that it does not become endemic.

Anderson[2] describes an outbreak of "epidemic catarrhal jaundice" at Goalpara jail, India. The symptoms were fever 100° to 101° F. The icteric tint appeared immediately after the fever, one to ten days after the commencement of the disease. The liver was tender but *not* enlarged.

Mathias[3] describes a form of jaundice prevalent among the troops in South Africa. The disease commences with a rigor, 100° to 103° F. The liver and spleen become enlarged, especially the former. Jaundice appears about the third to the sixth day. The temperature falls to normal in about eight to twelve days, and there may be another rise a few days later. There were no deaths. The true nature of this and the previous forms of jaundice is a matter of much doubt.

References.—[1]*Brit. Med. Jour.* Sept. 17, 1904; [2]*Ibid*; [3]*Ibid.*

**JUGULAR VEIN (Ligature of the Internal).** *Hunter Tod, M.B, F.R.C.S.*

Nicoll[1], in an excellent paper on the indications for operative procedures on the lateral sinus, emphasizes the rule that, given a sinus opened for infective thrombosis in the sigmoid region, the exposure and opening of the vessel must be continued until the end of the thrombus is reached. The removal of the whole of the infective thrombus constitutes the patient's main chance of escaping general pyæmic dissemination. He has made it a practice to ligature the jugular vein as a preliminary to mastoidectomy in two classes of cases:—

1. Cases in which the ear and mastoid disease have produced secondary mischief in the cervical glands. Such cases are usually of tubercular origin and occur in children.

2. Cases in which no glandular affection exists, but in which there is reason to suspect either actual sinus involvement, or such an extent of carious mischief as will probably necessitate exposure of the sigmoid

curve of the sinus. Preliminary ligature before exposure of the sinus may prevent systemic infection which the disturbance of the sinus wall in its exposure, palpation, and opening up (before ligature) may bring about, by dislodging portions of the septic thrombus into the venous channel patent to the general circulation.

*Miliary Tuberculosis from the Middle Ear through the Sigmoid Sinus.*—Macewen[2], Nicoll[3], and Grossmann[4], all bring forward instances where acute miliary tuberculosis has ended the patient's life from the sinus becoming infected from tuberculous masses of granulation tissue, which have invaded the sinus in cases of tuberculous disease of the mastoid. Nicoll's proposition of early ligaturing of the jugular in tuberculous disease of the mastoid is to prevent this taking place.

References.—[1]*17th Meeting Otol. Soc. of Britain*; [2]*Brit. Med. Jour.* July 30, 1904; [3]*17th Meeting Otol. Soc. of Britain*; [4]*Arch. f. Ohren.* Feb. 1904.

**KERATITIS.** *Prof. Ralph Stockman, M.D.*

Manolescu[1] praises the good effect of **Hot Water** directly applied to the cornea in corneal infiltrations and parenchymatous keratitis. The cornea is cocainized and the water applied drop by drop at a temperature of 40° C. For this purpose the receiver must contain water at 60° to 65° C., since a large amount of heat is lost in the dropping. The action is to increase the local circulation, which results in the more rapid absorption of the infiltrations.

Reference.—[1]*Rom. Med.* No. 9, 1904.

**KIDNEY (Malarial Neuralgia of).**

*Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

A case of malarial neuralgia of the kidney simulating renal colic was recorded years ago (*see Lancet*, vol. i. 1889) by Surgeon Major G. H. Young. In that case the patient, a sergeant, was supposed to be suffering from stone in the kidney, and was about to undergo an operation, when the attacks were cured by the administration of **Quinine.** The subject has been revived lately by G. Piazza-Martini[1], who has related the case of a man of sixty who was seized one morning with an attack of well-marked renal colic, the pain being situated over the external border of the quadratus lumborum muscle, increased by pressure, radiating towards the loin, and accompanied by the emission of urine loaded with urates. The crisis recurred daily at the same hour, without any further modification in the appearance of the urine. A gram of **Quinine** was then administered, and the following day the attack was only slight; after a second dose of quinine the attacks stopped, but returned when the use of the remedy was suspended, and it was only by a daily dose of quinine that a cure could be obtained. He adds two other cases presenting the same characteristics, and a third due to G. Mastrogiacomo.

Reference.—[1]*Gaz. Sicil. Med. e Chir.* Aug. 6, 1903.

**KIDNEY (Movable).** *E. Hurry Fenwick, F.R.C.S.*

Dr. A. H. Goelet[1] asserts that 75 per cent of the patients with severe prolapse of the kidney, who wear corsets, have either mild pyelo-nephritis or interstitial nephritis. He strongly advocates fixation, and operates in the following way : The kidney is reached by a vertical incision along the outer border of the erector spinæ muscle, the muscles being separated in the direction of their fibres ; the fatty investment of the kidney is opened by a vertical incision near the spinal side of the wound, and the kidney is delivered through the incision upon the surface of the back. The fatty capsule is then completely detached upon both the anterior and posterior surfaces, care being taken to detach the colon completely. The redundant fatty capsule is trimmed off on both sides. The fibrous capsule of the kidney is not detached or otherwise disturbed. The sustaining sutures, two in number, are inserted only under the fibrous capsule, each having three insertions through and under this fibrous capsule, and the ends are brought out through all the structures of the back at the upper angle of the incision in the skin, and are tied over a fold of gauze to avoid cutting by the suture and loosening of the loop. The suture material used is silk-worm gut, and the sutures are removed after three weeks. The wound is closed by two layers of catgut suture, one uniting the superficial fascia, and the other the skin margins. A gauze drain is inserted about the lower pole of the kidney, and brought out at the lower angle of the wound. This aids in supporting the organ, taking the strain off the sustaining sutures during the first forty-eight hours, after which time it is removed.

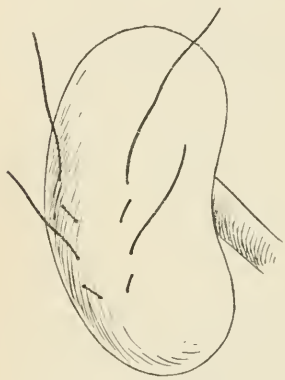

*Fig.* 28.—Goelet's Fixation-sutures in Nephropexy.

The author enumerates many reasons why nephropexy may prove a failure, the chief being as follows : (*a*) Postponement of the operation until the kidney is seriously disabled or an incurable pyelo-nephritis has developed, or until the health of the patient is permanently shattered ; (*b*) Failure to completely detach the colon from the kidney, which may drag the kidney away from its anchorage or give rise to annoying pain ; (*c*) Failure to immobilize the kidney until it can become permanently adherent, by employing absorbable sutures, or by attaching them insecurely to structures that yield to the constriction when it is tied ; and (*d*) Fixing the kidney too low down, where it will be irritated by pressure of the corsets or clothing constricting the waist.

He concludes with a record of 159 nephropexies by the method he describes, on 126 patients, in 33 of these both kidneys being fixed at

the same time, without a death, and without a single failure to secure permanent fixation. The ultimate results were cure of the symptoms and conditions depending upon the prolapse, in all of the cases he has been able to trace in from two to twelve months after operation.

REFERENCE.—[1]*Ann. Surg.* Dec. 1903.

**KIDNEY, Surgical Diseases of.** (*See also* BRIGHT'S DISEASE, CALCULUS, KIDNEY, MOVABLE, ETC.) *E. Hurry Fenwick, F.R.C.S.*

*Simultaneous Collection of Urine from both Kidneys by a Separator.*—No operating surgeon will under-estimate the importance of obtaining accurate knowledge of the power which each kidney may possess of withstanding the shock or sepsis of an operation upon some part of the urinary tract. Many manœuvres have been hitherto in vogue for securing this information, but nearly all are somewhat complicated, and some not free from actual danger. Thus until quite recently the urine was drawn off from each kidney by means of a ureter-catheter passed either through the cystoscope[1], or by the Kelly method[2]. Though either is simple enough in skilled hands, there is always the danger of carrying septic material on the point of the ureter-catheter to the pelvis of the kidney, or of bruising or otherwise injuring the ureteric tube. For these reasons the ureter-catheter has been regarded by most operators with disfavour, and, personally speaking, I now only use it when I am uncertain as to whether the lower ureter is strictured, or is harbouring an impacted stone.

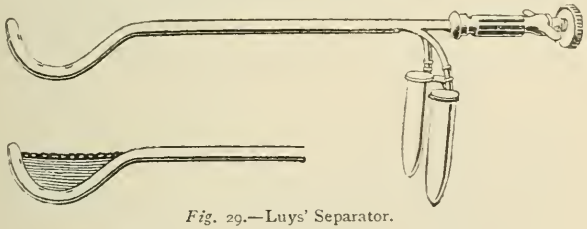

*Fig.* 29.—Luys' Separator.

But one of the features in the true progress of modern surgery is the simplification of technique; and for two and a half years the simple method of George Luys, of Paris, for obtaining water from either kidney has been before the profession. He has latterly demonstrated what he terms "the separator" (*Fig.* 29) before the International Medical Congress at Madrid in 1903, and it has been handled by practical and progressive men, and proved to be of value. Bickersteth[3], who first drew the notice of the English profession to it, speaks enthusiastically of it. Moynihan[4] and others are equally insistent upon its value. Every surgeon who has had practice in urinary affections can easily manage it, and will have no more difficulty in using it in the case of a male than of a female. A small instrument is made for children, the total calibre of the instrument being lowered from No. 21 Charrière

to No. 15. Another modification consists in the reduction of the curve of the vesical part of the instrument, so that it is more easily adaptable to the bladder of a child.

The accompanying figures make its construction and method of use at once apparent to those who have not seen it or read a description

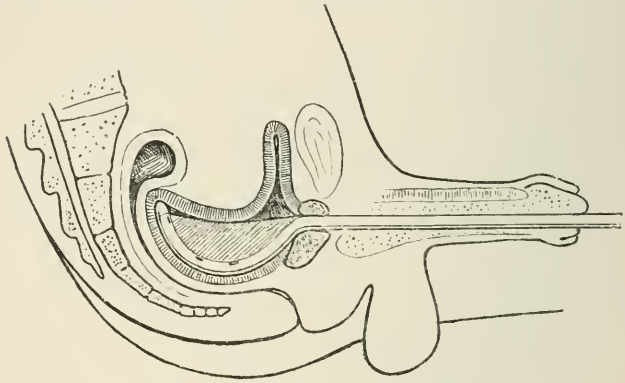

*Fig.* 30.—The Separator in Male Bladder.

of its mechanism. It consists of a double-channelled catheter with eyes on the side, and with a curve like a prostatic catheter, or more correctly, like a Benique catheter. By means of a screw and a thin chain, a diaphragm of indiarubber can be raised vertically along the curve of the catheter. Thus, when it is in position in the bladder

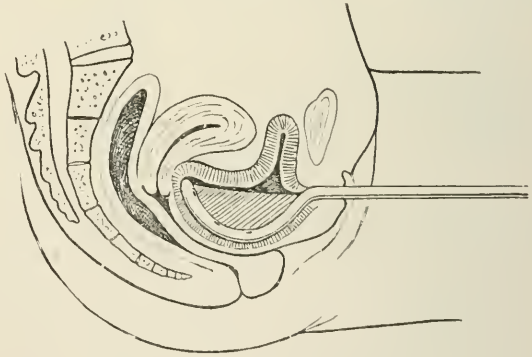

*Fig.* 31.—Separator in Female Bladder.

(*Figs.* 30 and 31), and the water-tight septum is raised, that viscus is divided into two lateral halves. The ureteric orifices are thus isolated, and their contents drain off through separated lateral channels.

TECHNIQUE.—The technique is simplicity itself, the only essential being a light hand, a urethra which admits the instrument, and a

distensible bladder. The patient drinks half a bottle of Contrexville, Vittel, or Wildungen water, or, failing this, some urotropin and salutaris. The urethra is cocainized with a 4 per cent solution, and the instrument lubricated with sterile oil and passed *home*. The diaphragm is raised by turning the screw at the end of the handle. The urine in the bladder is then allowed to flow away, and the patient is raised to the sitting posture. After a short interval the urine begins to flow drop by drop from either spout, and the collecting test-tubes can be adjusted to catch the secretion. In about 15 to 20 minutes sufficient will have been obtained for examination. Very little discomfort is caused, provided the instrument is passed *home* properly. Of course, if the operator only half introduces the instrument in the male, he leaves the curve in the membranous and prostatic urethra (*Fig.* 32), and if he then screws up the diaphragm, he will cause extreme pain and do damage.

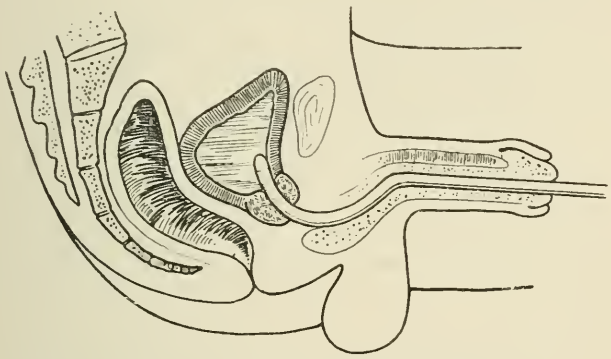

*Fig.* 32.—Separator in dangerous position.

[Criticism by the Editor.—A few words may not come amiss about a faultiness in the construction of the Luys Separator, nor will an estimate of its place in surgery, its value, and its limitations, be out of place. And it is not hypercritical or depreciative of an ingenious and admirable instrument, to point out the weak spots which may cause difficulty to the operator:—

1. When the diaphragm is lowered by revolution of the screw, the natural elasticity of its india-rubber cover draws the lax chain into the concavity of the curve of the instrument. If, however, the india-rubber has been *boiled* and softened, or if it is old, or if by any chance it has lost its elasticity, the chain is not evenly pulled into the curve, and it may then kink on its cogs, and not fall at all into place. When the instrument is withdrawn the cogs will still be standing, and may cut the urethra. Let the india-rubber be new, and disinfected by other means than by boiling.

2. Unless the curve of the instrument be placed *between* the ureteric orifices and kept against the bladder base, water from one ureter may mix with that coming from the other. A case is reported in which samples of urine were "separated" from both ureters of a patient who previously had had nephrectomy performed.

The instrument is of real value, and will take its place in the essential armamentarium of urinary surgery. But its place, its value, and its limitations are strictly defined.

*Its Place.*—It will rank after the cystoscope, for it must be *used after that instrument.* In the first place, no urinary surgeon can neglect the appearance of the mouths of the ureters, their shape, colour, or position[5]. Ureteric meatoscopy, I submit, is the first step in the differential diagnosis of surgical ureteric or renal disease. Secondly, the bladder must be pronounced free of disease by means of the cystoscope, before the "separator" can be used, for tubercle, villous growth, carcinoma, encysted stone, or pouch-inflammation can add morbid materials to either channel of the separator, and *grave* mistakes may be made by reason of this addition. As an example, it may be mentioned that blood trickling from a villous papilloma near the left ureteric orifice and issuing from the left side of the separator would indicate left renal hæmaturia; and the left kidney, if the operator acted upon this diagnosis, would be explored needlessly and to the patient's detriment and even danger. Many other instances of contamination from vesical sources may be named, but all contaminating sources can be eliminated by means of the cystoscope. I particularly emphasize this forecast, that the Luys separator may be indispensable in strictly renal cases, but that it must be the adjuvant of the cystoscope and be used after it.

*Its Value.*—By means of the Luys separator we can correctly solve many problems about the working capacity and secretory rate of the kidney. We shall gain a precise knowledge of unilateral surgical nephritis—of how far chronic Bright's disease affects one or both kidneys. It will be of especial value in enabling us to ascertain the stress resistance of a kidney; that is, its power of sustaining its function in the face of operative shock or sepsis.

*Its Limitations.*—The irregularly enlarged prostate of any size is a bar to its successful use, because of the alteration in shape of the bladder base, whilst any disease which greatly lessens the capacity of the viscus, such as advanced tuberculosis or carcinoma of the bladder, prohibits its use. In stricture, the urethral channel must be made sufficiently large for its introduction.]

*Post-operative Measures in Renal Surgery.*—Brown[6] advocates **Salt-solution Enemata** as a diuretic, and considers that they furnish a valuable method of flushing out the kidneys in conditions where such a flushing out is of prime importance. Among the most important of such conditions may be mentioned that occurring after nephrec-

tomy, nephrotomy, and nephropexy; in fact, to a lesser extent, all operations in which ether is the anæsthetic are associated with a diminution in urinary secretion, and might therefore be regarded as cases favourable for the application of this treatment.

As a result of these observations, it is the custom in Dr. Kelly's private hospital to carry out the following regimen in all cases in which the kidney has been operated upon: One pint or more of normal salt solution is administered by rectum every six, eight, or twelve hours, according to the necessity of the case, for a number of days after operation. In the six cases of nephrectomy, and the twelve or more of nephropexy in which this procedure has been carried out, the secretion of urine has been very free, very often even larger quantities than normal being passed during the days on which this procedure has been carried out. Besides this, it was noteworthy that the convalescence of these patients was much more comfortable than in the usual run of renal patients, the nausea and headache especially being markedly diminished. In milder cases it is hardly necessary to give the enemata with such frequency, but one or more were always given. The method is so absolutely free from unpleasant concomitants, and so easily carried out, that it would seem highly advisable to incorporate it among the essential procedures in the after-treatment of cases operated upon under general anæsthesia.

In the few cases in which nephrectomy was performed and in which there was a marked diminution of urine before operation, often associated also with albumin and casts, coffee or infusion of digitalis was added to the enema on several occasions.

References.—[1]*Medical Annual*, 1898, p. 550; [2]*Ibid*, 1896, p. 598; [3]*Lancet*, March 26, 1904; [4]*Brit. Med. Jour.* p. 560, 1904; [5]*Medical Annual*, p. 463, 1904; [6]*Maryland Med. Jour.* 1903; *Ther. Gaz.* Nov. 15, 1903.

**KNEE JOINT (Excision of).** *Priestley Leech, M.D., F.R.C.S.*

C. Blauel[1] reports the results of resection of the knee in 400 cases in von Brun's clinic. The results are very good, as he obtained a good one in 87·9 per cent of the cases, a bad result in 12·1 per cent. The operation is conducted under general anæsthesia, with an Esmarch bandage or tourniquet on to prevent any hæmorrhage. This has two advantages: It enables the surgeon to distinguish better between the healthy and diseased parts, and it also prevents (by cessation of the lymph and blood circulations) any dissemination of infected material to other parts of the body during the operation. At first Volkmann's **Transverse Incision** was used, but it was sometimes followed by necrosis of the patella; and now, as a rule, the **Convex Incision** of Textor, going below the patella, is used, except where it is thought the disease extends some way up the bursa beneath the quadriceps, when a convex incision with the convexity upwards is used, as Hahn recommends. In both cases the incision begins behind the epicondyles of the femur, so as to

provide a broad base for the flap. An extra-capsular excision is done as much as possible. From his experience he says that in adults and children, if in favourable cases conservative treatment does not lead to improvement, **Excision** should be done, and in bad cases it should be resorted to as a primary treatment. In the poorer classes, excision should be done sooner than in the better classes, since conservative treatment in the lower social strata cannot be adequately carried out.

References.—[1] *Beitr. f. klin. Chir.* xlii. Bd. 1 Hft.

**LABOUR.** *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

*Management of Breech Presentations.*—Breech presentations are generally regarded with some apprehension, on the ground of danger to the child. Kucher[1] emphasizes the fact that the troubles incidental to breech presentations are the result of too early interference in the majority of cases. Up to the time when the breech appears at the vulva the child is seldom in any danger; and if labour has so far proceeded spontaneously, the arms are usually flexed on the chest, and the lower uterine segment has been gradually and completely dilated; and if expulsion does not take place naturally, extraction is usually easy. All this is changed if premature tractions have been made on the lower extremity of the child. The arms have been pushed up above the head, and the body of the child, as it is very compressible, has been forced through the uterine orifice before the lower uterine segment has been sufficiently dilated for the passage of the head. These two complications make us lose much valuable time at the last stage, when quick delivery is very important. As the arms are high up, it is hard to reach the elbow, and hard to bring the arm down; after this the greatest circumference of the head offers the greatest difficulty in extraction if the lower uterine segment is not sufficiently dilated. It is much easier to overcome a considerable disproportion between the head and the pelvis, than to extract the head when it is still firmly retained by the lower uterine segment, which in ninety-nine out of a hundred cases really offers the resistance. Sometimes, in cases of complete breech presentations, labour proceeds smoothly up to a certain point, and then progress ceases, perhaps for some hours. If interference is indicated, the leg cannot be brought down, the breech being engaged; and Kucher finds the use of the forceps very satisfactory, with some precautions. It should not be applied before the breech is down in the pelvis; the handles should not be pressed too firmly together lest the blades injure the soft parts. By inserting a folded towel between the handle of the forceps, too hard pressure by the tips of the blades on the soft parts of the child can easily be avoided. The tractions, moreover, should be made slowly and only during a pain.

*Forcible Dilatation of the Cervix.*—The use of **Bossi's Dilator** has proved serviceable in the hands of Dr. Baoli[2] in nineteen cases of

placenta prævia. He urges its use in these cases in place of manual dilatation or Cæsarean section. It is claimed that in fifteen or twenty minutes the cervix is sufficiently dilated to permit the delivery of the child with no more laceration than is usually seen in spontaneous labour. He reports a maternal mortality of only one in the 19 cases. In central placenta prævia he would dilate to between 8 and 9 cms. if the patient is near full term. Should bleeding occur during dilatation he endeavours to rupture the membrane. If this is not sufficient the hand is introduced and version is made, and the body of the child is used as a tampon. If delivery is attempted by forceps, the instrument must be rapidly withdrawn, because the cervix will contract as soon as the dilator is removed.

Armstrong[3] reports favourably on the use of Bossi's dilator in 4 cases, namely, 1 of eclampsia, 1 of placenta prævia, and 2 of premature rupture of the membranes.

Munro Kerr[4], in relating seven cases in which the dilator was used on various indications, sums up his conclusions as follows :—

1. When the cervix is obliterated and the os will admit the dilator without difficulty, dilatation can be carried out in about twenty-five minutes, and there will be little or no laceration.

2. In cases where the pregnancy has advanced to or near term, even although the cervix is not obliterated, dilatation may be accomplished with comparative safety to the cervix, provided care, time, and patience are expended in the operation.

3. In cases of early pregnancy with the cervix unobliterated, there is a decided risk of extensive lacerations, even although the greatest care is taken.

*Obstructed Labour.*—Labour may be obstructed by anomalies or disease, either of the pelvis or of the pelvic organs ; and some of these are dealt with by Puppel[5]. The conditions he had met with were contracted pelvis, uterine myoma, cervical carcinoma, and ovarian tumour. The first group calls for no special comment. Of the two myoma cases, one was dealt with by Porro's operation ; the other presented the unusual feature, that the child was born spontaneously, being dead and macerated, whilst the obstruction affected the placenta. After various attempts, extending over several days, to extract the placenta, an abdominal hysterectomy was performed. The case of carcinoma of the cervix was dealt with in the following manner : The patient was chloroformed ; laparotomy was performed. The child was delivered through a longitudinal incision in the anterior wall ; the uterus was then amputated supra-vaginally and an elastic ligature applied. The abdominal wound was closed. The carcinoma of the cervix was removed with the Paquelin cautery per vaginum, and the stump of the uterus extirpated. She made a good immediate recovery, but died three years later of a recurrence in the left parametrium. Puppel discusses the advantages of this method of dealing

with such a case as against other procedures. In dealing with *ovarian tumours*, he says that in the case of a cyst one should always puncture during labour and undertake the removal at a later date. This is not a view universally held ; an important body of opinion favours the removal of the tumour by the abdomen during labour, a Cæsarean section being carried out first if it is not otherwise possible to deal with the tumour.

Seven cases of **Cæsarean Section** for contracted pelvis are reported by Hellier[6], with six maternal recoveries. Two of the children were still-born. Hellier gives a very interesting *resumé* of the history of the operation. Jardine[7] records ten cases of Cæsarean section, all of which recovered. At the same time he related the histories of 12 other cases of contracted pelvis, 8 of which were treated by the induction of premature labour, and 4 by symphysiotomy. Jardine expressed a doubt whether symphysiotomy would ever become a favourite operation ; prolonged nursing was required, convalescence varying from thirty-one to forty-two days ; and the patient had to lie very still in order to obtain union. Another objection was the risk of laceration of the soft parts.

Symphysiotomy has a rival claimant to favour in **Pubiotomy**, or "**Hebotomy**," of which according to Van de Velde[8], twelve cases have been reported, with good results. All the mothers recovered, and all the children were born alive ; and in some cases the patients were up and about, three weeks after the operation. As this operation is probably not widely known, we give an account of it as described by Van de Velde, with an enumeration of the advantages which it is claimed to possess over symphysiotomy :—

A cutaneous incision is made from the left spine of the pubes downwards and inwards to the outer surface of the left labium majus opposite the vestibule. The left index finger then burrows in the lower angle of the wound until it reaches the inferior and posterior surfaces of the pubic bone. A specially-constructed needle, curved to suit the posterior outline of the pubic bone and with a bluntish point, in the side of which is a slot eye, is introduced into the lower angle of the wound, and, guided by the left forefinger, is passed upwards behind the pubic bone until it emerges in the upper angle of the wound. The ring of a Gigli's saw is hooked into the eye of the needle, which is then withdrawn so that the saw comes to lie behind the pubic bone. This is divided in a few seconds. The saw is withdrawn from the lower angle of the wound. Hæmorrhage, which is usually slight, is arrested by tampons, and the wound is dressed antiseptically. The inner surface of the labium majus should be everted over the wound by pressure forceps. This prevents infection of the wound by vaginal discharges. The wound may be closed immediately if there is no hæmorrhage, otherwise it is left until delivery is effected. The advantages over symphysiotomy are :—

1. It is easier and more rapidly performed.

2. The bladder and urethra and a part of the anterior vaginal wall retain their natural support.

3. Extension of the wound into the vagina is less probable, as the soft parts are thicker laterally than in the centre.

4. For this reason, and because the clitoris is avoided, there is less hæmorrhage.

5. The wound does not communicate with the vagina or vulva; this is a great advantage in septic cases.

6. Union is more rapid and effectual between bony surfaces than in the case of a joint such as the symphysis, and there is less danger of suppuration.

7. In a subsequent labour, hebotomy may be performed on the other side, while a second symphysiotomy is difficult and dangerous on account of adhesions between the bladder and the posterior surface of the symphysis.

The complication of pregnancy by *fibroids* has been dealt with by Amand Routh[9] in a learned and exhaustive paper which we commend to our readers. A case in which a cervical fibroid obstructing labour was enucleated is reported by Böhnke[10]. The tumour was of soft consistence, and had dilated the cervix and projected into the vagina; the fœtal head presented behind it. After the enucleation of the tumour, which weighed $2\frac{3}{4}$ lbs, the child was rapidly delivered alive by version.

Obstruction to labour by *cancer of the rectum* is a relatively rare complication. Russell[11] has tabulated 23 recorded cases, including one of his own. In the majority of them Cæsarean section was resorted to. He formulates the following rules for treatment :—

1. Rectal discharge and induration of tissues should always be suspected and at once investigated.

2. If cancer of the rectum is discovered early, and is still limited in extent, and the pregnancy is not far advanced, immediate radical treatment should be considered, though probably the emptying of the uterus should be a preliminary, owing to the greater risk of hæmorrhage in the gravid state and the danger of abortion (Endelmann, Petersen, Löhlein).

3. In advanced pregnancy, with a small circumscribed growth, the uterus should be emptied before removal of the growth.

4. In advanced pregnancy with living viable child, where there is doubt before opening the abdomen, Cæsarean section and hysterectomy should be performed, and if the case is favourable and the patient can stand it, an inguinal colotomy should follow, and the diseased rectum should be detached from above so as to allow the operation to be easily completed by the vagina according to the method described by Rehn or Liermann.

5. When, on the other hand, the disease is found to be beyond

radical treatment, the child should be saved by Cæsarean section or hysterectomy, with or without colotomy as may be necessary.

6. If the child is dead and the cancer is beyond operation, Cæsarean section is still likely to be needed, unless labour can be accomplished *per vaginam* and without undue crushing or laceration, with the help of perforation, embryotomy, or version.

Two unusual cases of obstructed labour are reported by Hofmeier[12], the obstruction consisting of cicatrization of the cervix resulting from the previous performance of deep cervical incisions in labour, in the manner advocated by Dührssen for rapid delivery.

An intra-uterine form of obstruction is that in which the difficulty arises from *shortness of the cord*, which may be either absolute shortness, or secondary shortening caused by coiling of the cord round some portion of the child's body. Nicholson[13] has made a study of such cases. The diagnosis may be said to be impossible until the head is well down in the pelvis. When this stage has been reached, if the cord be either actually or relatively shortened, a recession between the pains may be noted, together perhaps with pain during the uterine contraction, referred particularly to the fundus uteri, and in addition, in some cases, the passage of bright red arterial blood between the pains. Brickner noted the presence of frequent jerky urination in the intervals of the pains of this stage until such time as the head reached the vulva, and he attributed great importance to this as a diagnostic sign.

In the event of there being a short cord, either absolute or relative, of such a degree that the expulsive uterine efforts produce tension of the cord beyond its elastic limits, there will result either placental separation, rupture of the cord, uterine inversion, or fœtal ventral hernia. Except for the use of forceps in some cases of coiled cord, no treatment is usually possible until the head reaches the pelvic floor ; and then, if coils be found which cannot be slipped over the child's head, the cord should be divided between ligatures or pressure forceps. The latter have the advantage of saving time.

In connection with the umbilical cord, we may here refer to an interesting case, although it does not directly relate to obstructed labour. It is one reported and illustrated by Hawthorne[14], in which a cicatricial constriction of the abdominal wall and of the left thigh, in a child ten years of age, was attributed to ante-natal pressure of the cord.

*Rupture of the Uterus.*—This is undoubtedly one of the most formidable complications that the obstetrician can meet ; it is one of those few conditions in which etiology, pathology, and diagnosis are so relatively simple that they become insignificant in comparison with the subject of treatment. The anxious question is, whether it is best to interfere surgically, or to adopt an expectant treatment with gauze packing and tamponnade. Labusquière[15] addresses himself to this question in a monograph based on the experience of

different authorities since antiseptic midwifery was established. Nearly twenty years ago packing and draining the uterus met with great success in Pajot's wards ; and this plan has been warmly advocated since. Varnier's statistics, however, showed that operative treatment gave much better results ; and this need cause no surprise when we reflect on the improvement of major surgical results all round, owing to more satisfactory antiseptic methods. Labusquière admits that any form of major surgery must be out of the question in many cases of rupture during labour, owing to surrounding circumstances. Then, conservative or obstetrical measures can alone be employed. But, taking a wide survey, surgical treatment offers the patient the best chance of recovery, whilst expectant measures involve the most peril. Operative treatment includes several methods, from panhysterectomy to "exclusive suture." By the latter term is understood Zweifel's method of applying sutures to the serous coat alone, so as to convert a total into an incomplete rupture. The uterus is exposed by an abdominal incision ; the pelvis must not be elevated lest blood and lochia should run up into the upper portion of the peritoneal cavity ; lastly, all blood is removed "to the very last drop" ; then the sutures are applied to the serous coat on each side of the laceration, and tied. This "exclusive suture" method was first tried on a patient so collapsed that panhysterectomy was out of the question. The thorough drying of the peritoneal cavity is essential in this operation. Abdominal section, followed by complete suture of the laceration, so as to unite the muscular coats and spare the patient the perils of a weak cicatrix in the uterine walls, has been followed by successful results : it is, however, bad surgery as a rule, since the edges of the wound are probably septic before suture, and so complete suture should not be attempted save where the rupture is small, and non-infection practically certain. Zweifel's "exclusive suture" therefore seems the best conservative surgical method.

A case is reported by Fraser[16] which shows the success that may attend courageous action in adverse circumstances The patient was attended by a midwife, who, during labour, put her fingers into the vagina to help the patient, and had passed them high up at one time, causing intense agony, after which labour entirely ceased. Great weakness and vomiting had followed. On examination there was great tenderness on palpation all over the abdomen. The patient was vomiting dark green fluid, and labour pains had ceased. On vaginal examination, the os was fully dilated, the cervix soft, the posterior lip swollen and low in the vagina. On the posterior wall of the uterus above the os, there was an abnormal opening. The head was above the brim, the vertex toward the right and posterior and freely movable. On introducing the hand it came in contact with a coil of intestine. It was impossible to rotate the child's head, as the uterus rotated with it. The head could not be reached by forceps.

It was possible to deliver by version, and this was done without much difficulty. The child was dead from separation of the placenta. On removing the placenta the intestine again prolapsed. It was impossible to take the patient to a hospital, and accordingly operation was done at the house. The tear was on the posterior surface, extending completely across, and to the left. The uterus was **Completely Removed,** the abdominal cavity irrigated with hot salt solution, and packed with sterile gauze. This was carried down into the vagina which was tamponned with iodoform gauze. The patient made a recovery complicated by vomiting, distension of the abdomen, and tenderness. The gauze was removed five days after operation.

*Adherent Placenta.*—Edhem[17] approaches this subject from the point of view of histology, with the object of ascertaining the cause of adherence. His conclusions are somewhat similar to Hense's, and are as follows :—

1. Placental adhesions are due to an alteration in the uterine mucosa, and tend to recur in subsequent confinements.

2. They are not inflammatory in nature.

3. Histologically they show a hyperplasia of the interstitial tissue of the decidua (especially the serotina), which ends in the disappearance of the spongy layer where utero-placental separation normally takes place, either by the substitution of a layer of dense compact tissue, or by its suppression in places permitting immediate contact between the villosities and the uterine muscle. On such a supposition, it becomes easy to understand how adhesion is apt to recur in subsequent pregnancies, for insufficiency of the uterine mucosa remains constant. As a matter of fact, Hense found in 168 cases of manual separation of the placenta, that a repetition of the complication occurred in 43·55 per cent.

It is worthy of note in these cases that puerperal complications are usually absent. If we admit the non-inflammatory nature of the adhesions, it is evident that if the patient does not die of hæmorrhage, and if the uterus is thoroughly curetted and cleaned out, the patient will be almost sure to recover without further complication, for when once the placenta is removed, the uterus is left in the normal post-partum condition.

Baisch[18] points out that manual extraction of the placenta must often be performed hurriedly, without time for proper hand sterilization, and that during the act of removal, all germs present are necessarily actually inoculated into the huge open wound represented by the interior of the uterus. Under these conditions the use of **Rubber Gloves** is of the greatest advantage. Since their adoption for this purpose in the Tübingen clinic, the mortality in these cases has fallen to 0 per cent, whilst 70 per cent of cases run an absolutely normal course after manual extraction. In other large institutions the mortality is about 3 per cent ; and in Berlin and Munich, where gloves were not used,

the percentage of cases running a normal course after manual extraction was only 51 and 38 respectively.

*Post-partum Hæmorrhage.*—Fritsch[19] recommends the treatment of this complication by **Pressure.** Post-partum hæmorrhage is due, broadly, either to atony or to tears of the uterus. In cases of atony, the placenta is first expressed or otherwise removed—generally an easy matter. His procedure is then as follows: The hand is pressed between the recti muscles in a sort of massage-like manner, and the uterus is caught hold of. The blood which it contains is already lost for the patient, and must therefore be expressed. One then brings the uterus forwards by pressing both hands behind it, and forces it into a position of anteflexion over the symphysis pubis. In this way there will be a deep funnel-shaped hole behind the uterus, into which one packs towels, or balls of wool if one has it at hand. A binder (a bandage) or two towels fastened together, are then very tightly applied, so that the pad is firmly driven downwards, while the uterus is held in front of the pubes by the same bandage. It is impossible for any further bleeding to take place while the binder lies *in situ*. After twelve hours it can be taken off, when it will be found that the vessels have thrombosed. Meanwhile the usual restorative measures are adopted, such as raising the foot of the bed, hot-water bottles, injections of ether, normal saline solution, etc. The following advantages are claimed for this method, after an experience of thirty years:—

1. The pressure on the abdomen answers better than temporary pressure on the abdominal aorta, and then bandaging of the legs.

2. The bleeding cannot return, since the cavity of the uterus does not exist as long as the binder is in position.

3. Tamponnade is by no means easy, and in the hands of an inexperienced practitioner the patient will often bleed to death before he has been able to pack the interior of the uterus.

4. One loses no time in disinfecting, since the whole of the method can be applied from without.

5. After the binder and pad are in place the patient is not disturbed.

6. Since one does not work through the vagina, there is no risk of sepsis. Lastly, there is no need of an after-treatment. On taking the binder and pad away, the uterus falls into its place.

For hæmorrhage due to lacerations, Fritsch formerly advised suture, but he has come to the conclusion that this method is not reliable, because usually the tear is not only in the cervix, but extends far into the parametrium, and sometimes creates a very deep cavity, in which large vessels are torn across. To pull the cervix down by vulsella and to suture the tear in the cervix must be useless, for one cannot pull the parametrium down at the same time. Plugging, too, cannot reach the bleeding vessels, and therefore will prove useless frequently. In these cases he applies double pressure. After removal of the placenta the accoucheur, standing on the left side of

the bed, presses the uterus, from the abdomen, as far as possible downwards into the pelvis, the uterus being in a position of anteflexion. This expresses coagula. Then he forces the labia majora with the left hand as far as possible upwards toward the sacral prominence, as if he wished to push the whole of the pelvic floor into the cavity of the pelvis. In a woman who has just been delivered it will be found quite easy to apply the pressure from above and from below, so that no further bleeding can take place. The left arm can rest on the bed and will not tire easily, but if the right hand finds difficulty in keeping up the pressure, the nurse or some other person can be instructed to press with both hands on the practitioner's right hand. It does not matter if the tear is situated to the right or left, one must always press directly in the middle line. After half or three-quarters of an hour, or even longer, the pressure is gradually taken off. The right hand is first taken away, and it will be found that the uterus remains lying low down, and that the bleeding has ceased. In the place of the hand, one places a sandbag or some other weighty substance of about 3 kilos. The patient is kept quite still, and then the left hand is taken away. No after-treatment is required, and it will be found that even enormous hæmorrhages can be stopped almost at once by this method, not to recur again.

*Ruptured Perinæum.*—It appears that in Germany a medical man can be fined 900 marks (£45) and sentenced to three years' imprisonment, besides having to pay compensation to the patient, for neglecting to **Suture a Ruptured Perinæum.** Zweifel[20] reviews an actual case in which a practitioner found himself in the law courts on this charge. The law does not suggest that a medical man is responsible for a rupture of the perinæum, but he is responsible for its detection and repair. Zweifel reviews the defences that may be put forward for not suturing a perinæum, and finds them all wanting. The first is that ruptures are capable of healing spontaneously, with which he does not agree. The next possible defence is that exhaustion on the part of the practitioner, or severe flow of blood, which could occlude the view of the parts, might hinder the suture ; but this is no excuse for not suturing it the next day. Another excuse (offered in this particular case) was that the practitioner did not feel justified in giving an anæsthetic by himself, and he could not obtain the services of another practitioner. Zweifel points out that the injection of a 1 per cent solution of cocaine will overcome this difficulty. The last defence was, that attempt to repair a complete rupture would have been unsuccessful, and that it was best to wait till it could be done by a specialist after the lying-in. Zweifel admits that the primary operation does not always succeed, but claims that failure is usually due to faulty methods.

We believe that many cases of rupture, perhaps of the minor degrees, are left unsutured, where this course is not followed by good results,

and that two main considerations are responsible for this. The first is the erroneous view, to which Zweifel alludes, that most tears heal spontaneously; the second and perhaps more important one, is the detrimental doctrine that a torn perinæum is the attendant's fault. This doctrine has unfortunately become current, not only in the profession, but also among the public; and the result is that remarkable individual, the practitioner who claims that in so many hundred or thousand confinements he has "never had a torn perinæum." It is very easy to *not see a tear if one does not look for it.* The effect of this pernicious teaching is that there is a great temptation for the practitioner to ignore a tear, so that he may not be blamed for what he knows to have been unavoidable. Far from suggesting that tears are never preventable, we are firmly convinced that many a perinæum is saved, or the extent of tear minimized, by proper management. But we believe that the possibility of the occurrence of non-avoidable tears ought to be frankly and widely acknowledged, in order to remove an undeserved stigma from those conscientious men who *do not neglect* their cases, but suture every case where a tear is more than nominal.

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**LABYRINTHINE SUPPURATION.** *Hunter Tod, M.B., F.R.C.S.*

Recently considerable attention has been directed to the etiology and treatment of *labyrinthine suppuration*, as shown by papers on the subject by Hinsberg,[1] Ricardo Botey, and Milligan. According to Milligan[2] the most frequent causes of infection of the internal ear are: (1) Suppuration of the middle ear extending through the external labyrinthine wall; (2) Suppurative processes originating at the base of the brain, and extending along the perivascular and perineural sheaths of the auditory and facial nerves; (3) Deposition of pathogenic organisms by the general blood stream in some portion of the internal ear; and (4) Injuries. The most frequent route of infection is through a fistulous tract in the horizontal semicircular canal.

Internal-ear suppuration is rarely the result of an acute middle-ear suppuration; it most commonly occurs in cases of long-standing suppuration accompanied by cholesteatomatous formation. The labyrinth may be infected in its entirety or only partially. Extension into the cranial cavity usually follows the normal channels. Encephalic abscess of labyrinthine origin, so far as is known, is always cerebellar. In Hinsberg's 198 collected cases, 106 died, 76 deaths

being due to intracranial complications, of which meningitis was the cause in 60 cases.

Septic invasion of the labyrinth may run an acute or a chronic course. When acute, certain striking symptoms present themselves. Thus, deep-seated boring pain is complained of, there is a rapid elevation of temperature and other febrile indications, sickness or nausea is almost invariable, and vertigo is so pronounced as to necessitate the patient's remaining in the horizontal position. Nystagmus either in the vertical or in the horizontal plane is common, whilst rapid, and at times complete nerve-deafness is almost invariable.

In the more usual class of case, however, the invasion of the labyrinth runs an almost chronic course, the external labyrinthine wall slowly crumbling away as the result of micro-organismal attacks. In such cases symptoms, although fairly characteristic, are not nearly so well marked as in acute infections. Pain is frequently absent, vertigo is not so pronounced, often being more of the nature of a swimming sensation in the head ; there is slight, if any, elevation of temperature, and sickness is by no means constant. The existence of these symptoms, combined with a rapid onset of nerve-deafness, and the frequent presence of nystagmus, should at once attract attention to the probability of the internal ear being affected. Another important symptom is the presence of facial paresis or paralysis. Facial paralysis supervening in the course of a chronic suppuration of the middle ear is always a signal of deep-seated disease. The chief difficulty in diagnosis is the possibility of a concomitant lesion of the cerebellum.

In all cases of labyrinthine suppuration the prognosis is necessarily grave, especially when following scarlet fever, or if of tuberculous origin. But the disease is not necessarily fatal, and operation on the labyrinth, simultaneous with or subsequent to the radical mastoid operation, may bring about a successful result. In Hinsberg's cases, out of 31 operations 23 recovered. He describes the following steps with regard to the operation :—

1. The radical operation is performed, with removal of the posterior wall of the meatus, sufficient to expose the oval window.

2. Opening of the foramen wall, and, if opening of the cochlea is intended, removal of the promontory.

3. Introduction of a probe through the oval window, and, under its guidance, opening of the vestibule from the horizontal canal, if possible along its anterior cross, or, under difficult anatomical conditions, from behind. A fine burr is used.

Milligan[2] lays down the following points as guides to operation :—

1. In any case of suppurative middle-ear disease where well-marked nerve-deafness upon the affected side is accompanied by frequent attacks of vertigo and sickness, and by nystagmus, either constant or intermittent, a careful search should be made for the presence of any fistulous tract leading into the labyrinth. If found, such tract

should be opened up and explored ; if not found, however, an exploratory opening through the horizontal semicircular canal or foot-plate of stapes is justifiable.

2. In all cases of suspected labyrinthine disease of septic origin, the vestibule should be promptly opened.

3. In cases of chronic suppurative middle-ear disease accompanied by the presence of cholesteatoma and erosion of the external labyrinthine wall, free opening of the area of involvement should be effected.

4. In cases of suspected cerebellar abscess accompanied by symptoms indicative of labyrinthine involvement, the operative pathway should be *via* the middle and internal ear to the posterior surface of the pars petrosa ; in other words, through the median wall of the mastoid antrum. In this way the labyrinth is opened up, the anterior portion of the corresponding cerebellar lobe is exposed, and any extra-dural abscess lying upon the posterior surface of the pars petrosa would at the same time be located and drained.

Ricardo Botey[3] points out that if the labyrinth be completely destroyed there may be no symptoms, except complete deafness. He advises complete removal of cochlea, and promontory as far forward as Eustachian tube, if pus be found in the labyrinth. If the tuning-fork tests show that the function of the labyrinth is not destroyed, then the radical mastoid operation should be done, and labyrinth not opened unless symptoms continue for five days.

References.—[1]*Arch. Otol.* xxxi, No. 2-3 ; [2]*Jour. Laryng.* March, 1904 ; [3]*Ann. des Mal. de l'Oreille*, Dec. 1903.

**LACRYMAL APPARATUS (Disorders of).** *A. Hugh Thompson, M.D.*

*Lacrymal Obstruction.*—Byers[1] finds that in about 5 per cent of the cases of chronic catarrh of the lacrymal canal, nasal conditions are responsible. To diagnose these cases he applies a pledget of cotton-wool soaked in **Adrenalin Solution** to the opening of the duct in the inferior meatus. When this produces dryness of a previously watery eye, treatment must be directed to the nose. In the majority of cases where the nasal condition is not responsible, he recommends syringing, first with **Adrenalin** (1–2000), then with one of the new silver salts—**Protargol, Argyrol,** or **Nargol.** Argyrol can be used in solutions of 5, 10, or 20 per cent. If the fluid will not at first pass, he applies a special clamp to prevent regurgitation through the upper canaliculus, and employs a syringe with a special nozzle to prevent regurgitation through the lower. Injections of adrenalin are made at short intervals without removing the nozzle, so that the mucous membrane, being contracted little by little from above downwards, the fluid can eventually be forced through. In this way, he says, it is possible to re-establish patency in numerous cases which would otherwise be amenable only to probes—always painful and commonly unsatisfactory in their results.

In cases which refuse to yield to this or similar treatment, the question

of excision of the sac must be considered. The danger of doing nothing consists in the infective nature of the fluid regurgitated from the sac. So long as the corneal epithelium remains sound it may be harmless, but the slightest abrasion of the cornea, or a simple ulcer, from whatever cause, may be changed into a destructive hypopyon keratitis in the presence of blenorrhœa of the sac. Operations for cataract should never be undertaken in the presence of this condition.

In describing the operation for excision of the sac Werner[2] recommends that the sac should not be opened, as is generally done, but carefully dissected out with a dressing forceps and dull-pointed scissors. First, the inner wall is separated from the groove with the dull point of the scissors, then the sac is cut off above from the canaliculi, and the posterior wall is detached. Now, holding the sac firmly at its upper end, the external wall is separated, and the sac cut off close to the beginning of the nasal duct. If the sac has been entirely removed, there will be left a perfectly smooth cavity representing the lacrymal groove. With a small curette, establish a communication with the nose, through the nasal duct. This serves for the slight drainage of the wound which is necessary. Now close the wound with three or four sutures, as is found advisable. Place upon the sutured wound a small roll of iodoform gauze, over this several layers of plain gauze, and then a firm pressure bandage. After two or three days the dressing is changed, and by the seventh day the healing is complete in a typical normal case. After three weeks it is almost impossible to detect the area where the operative invasion had been made. With regard to the after-effects, we must remember, he says, that extirpation of the sac is not done for the purpose of correcting the epiphora, but to remove from the eye a dangerous source of infection. If the epiphora proves very annoying, we simply remove the accessory lacrymal gland, or even the lacrymal gland itself. As a rule, however, the patient does not seem to be annoyed by the epiphora after the excision of the sac.

*Acute Inflammation of the Lacrymal Gland* is a little-known condition, which has been several times lately noticed at Moorfields Hospital. Inman[3] has collected notes of ten of these cases, from which it appears that the disease has a characteristic mode of onset—pain and stiffness in the outer part of the upper lid. Patients commonly consider that a stye is forming, and at this stage a prominent feature is marked œdema of the outer part of the ocular conjunctiva. In most cases (8 out of 10) suppuration takes place, and fluctuation can be felt by placing the forefinger in the upper fornix of the conjunctival sac, a procedure, however, which is often only feasible under an anæsthetic. Evacuation of the pus gives immediate relief, and if this is not done at once by the surgeon, it is in the course of a few days by nature. The only other treatment required is frequent **Hot Fomentations**, which should be applied from the first. The abscess does not point

through the skin, and when it is opened artificially the incision should never be made through the skin, but through the conjunctival fornix. The non-suppurating cases of dacryo-adenitis are sometimes associated with inflammation of the parotid, and may be a manifestation of mumps.

References.—[1]*Ophth. Rev.* Feb. 1904; [2]*Med. Rec.* April 2, 1904; [3]*Royal Lond. Ophth. Hosp. Rep.* vol. xv.

**LARYNGEAL STENOSIS.** *P. Watson Williams, M.D.*

*Stenosis following Intubation.*—The relief afforded by **Intubation** in cases of acute laryngeal obstruction in diphtheria, has led to its fairly general adoption in many large hospitals in Europe, while in America it is still more generally practised, especially since the anti-toxin serum has so greatly enhanced the value of intubation, by lessening the average period during which the tubage must be maintained, from about seven to four days. But in a small percentage of intubated cases the recurrence and persistence of dyspnœa on removal of the tube causes much trouble, and sometimes necessitates persistent intubation for a longer or shorter period, constituting what O'Dwyer termed "retained intubation tube." Berg found that out of 578 cases intubated at the Willard Parker Hospital, from January, 1901, to April, 1903, there were 221 recoveries, which included 17 persistent tube cases. Many of the cases are not sent in until after the first extubation, or are sent to the hospital when a fatal result is expected: hence the 38 per cent of recoveries represents a very good result. But Berg points out that an increasing percentage of "retained tube" cases has been noticed, hence it becomes important to re-investigate the conditions which cause this increase. Berg recalls O'Dwyer's classification of retained tube cases into the following groups:—

1. Cases of prolonged stenosis, in which the original conditions necessitating the intubation persist beyond the usual length of time.

2. Cases of prolonged stenosis, due to pathological changes which have arisen during or subsequent to the primary intubation, and are not those of the diphtheritic process which necessitated the primary intubation. Such lesions are due (*a*) to the injurious effect of the intubation tube upon the structures of the glottis, larynx, or trachea; (*b*) to traumatism produced by the operator, either during intubation or extubation.

3. Cases of persistent intubation due to paralysis of the vocal cords: (*a*) temporary paralysis or spasm; (*b*) persistent paralysis.

As regards division 1, since the days of serum therapy the swelling and the exudate diminish and disappear faster than in the pre-antitoxin days, but the exceptional cases are those in which the exudate is not only on the surface, but in the stroma of the mucous membrane. Here the swelling persists, until practically the superficial layers have exfoliated, or, exceptionally, until gangrenous patches have separated, leaving ulcers which gradually heal. Berg states that in most cases

the necessity of single re-intubation is due to persistence of swelling and pseudo-membrane, and rarely even a second or third intubation, but considers that re-intubation after the eleventh day should not be necessary from these causes. Sub-glottic œdema of the mucous membrane immediately beneath the vocal cords is an important factor, especially in cases of stenosis persisting beyond the sixth day.

The majority of cases of long-persistent stenosis following intubation are due to pressure sores, which the Germans term "decubitus," produced by the pressure or rubbing of the tube against the mucous membrane over the prominent points of the tube. Decubitus may occur very early, as early as twenty-four hours after intubation. As would be expected, the longer the tube is retained the greater the liability to decubitus. Decubitus is most frequently located (*a*) At the anterior wall of the trachea, below the cricoid, the lower end of the tube being thrown forward as the head of the tube is thrown backward by the closure of the epiglottis over it. (*b*) Decubitus is next most frequent above the cricoid cartilage, over the lateral and anterior wall of the larynx, due to pressure of the retention swell. (*c*) It is next most frequent in the under surface of the epiglottis, due to pressure of the head of the tube. Other portions of the mucous membrane may be the site of decubitus. Of all these, by far the most important is the second, for the pressure is literally at the point where the recurrent laryngeal nerve enters the larynx on either side; hence pressure here produces paralysis of the motor function of this nerve. Berg believes that the vocal cord paralysis due to pressure is the main source of the paralytic cases. He considers that the most fruitful source of decubitus is the unskilful modifications of the O'Dwyer tube by operators who forget the principles upon which this tube is constructed, either too long or too large a tube being used.

The chief dangers resulting from decubitus are: (1) The swelling of the tissues around the ulcer requiring re-intubation, which only keeps up the abrasion and may lead to destruction of cartilage of the larynx or trachea, or even peri-laryngeal and peri-tracheal abscess; and (2) The contraction of the cicatrix formed when the sore heals; or (3) Opposing decubitus granulating ulcers becoming adherent.

There are no symptoms, says Berg, by which decubitus can be positively recognized during life, until its effects—stricture, atresia, abscess, etc.—have appeared, except that *late auto-extubation, occurring after often repeated re-intubations, positively indicates the presence of decubitus.*

**LARYNX (Cancer of).** *P. Watson Williams, M.D.*

From an investigation of the laryngeal lymphatics by means of injections, Cunco[1] divides these lymphatics into a supraglottic and subglottic group. The former includes lymphatics from the epiglottis, aryteno-epiglottic folds, the ventricular bands and the ventricles.

Between these two is an intermediate zone corresponding with the position of the true vocal cords, and these are usually connected with the supraglottic group, and though communicating lymphatics exist between the two sides posteriorly, there is no such communication anteriorly. This explains the direction of extension of malignant growths in the different regions of the larynx. The lymphatics of the supraglottic group above the cricoid end in the highest glands of the chain corresponding to the internal jugular vein, while the subglottic end in the prelaryngeal, prethyroid and pretracheal glands, and communicate with the lower glands of the sterno-mastoid chain. The other lymphatics from below the cricoid communicate with glands lying along the recurrent laryngeal nerve and lower sterno-mastoid glands. Thus, except for epithelioma of the epiglottis and arytenoid region, growths long remain confined to one side, and their tendency is to extend posteriorly. De Santi[2], from injections with mercury, observed that while there is an extraordinary injection all over the interior and exterior of the larynx, the radicles are exceedingly small as one gets towards the true and false vocal cords, while those of the epiglottis and aryepiglottic folds fill very easily on account of their larger size. Hence de Santi explains the fact that intrinsic growths have little tendency to spread, owing to a mechanical difficulty to the entry of the cancer cell into the smaller radicles.

Results of operative treatment are difficult to summarize, and without careful consideration of the date of operation and the methods of the operator, any statistics may be very misleading. The results obtained of late years by those who have had personal experience, or have been guided by the earlier experiences of others, are immensely more advantageous to the patient than could have been expected from the very frequent earlier failures. In our last issue we cited the good results obtained by Glück in extensive operations on the larynx, pharynx, and œsophagus. Semon[3] has summarized his results in cases operated on by **Thyrotomy**, where the growths were intrinsic. Out of eighteen such cases of undoubted malignant disease of the larynx, on which he had operated between June, 1891, and July 29th, 1902, no less than fifteen (*i.e.*, 85 per cent) were permanently cured. "Three of these patients died several years after the operation from affections altogether unconnected with the original disease; one, six years after the operation, from an acute abdominal affection; the second, three years and a quarter after the operation, from embolism of the heart or the lungs; the third, four years after the operation, from pneumonia. The remaining twelve are all alive and well, whilst the vocal results, with the exception of a few cases in which it was necessary to remove both vocal cords, are surprisingly good."

Moure, of Bordeaux[4], reserves thyrotomy exclusively for malignant growths originating in the interior of the larynx, and agrees with many

laryngologists that when one of the ventricular bands is affected, when there is peripheral infiltration, still more when corresponding arytenoid cartilage is fixed, or when there are signs of perichondritis, it is unsuitable, and ought to be rejected as a means of cure. With regard to extrinsic cancer, Moure considers that when the disease begins near the free edge of epiglottis, on its lingual and laryngeal surface, and is still very limited, it may be removed with the snare or cutting forceps after the application of cocaine and adrenalin. But when the growth has extended a little further down, involving almost the whole epiglottis, the base of the tongue, and perhaps even the glosso-epiglottic folds, especially the median one, it becomes necessary to perform an external operation, and Moure prefers that of transhyoid pharyngotomy as recommended by Gussenbauer and revived by Vallas. He states that this operation may be considered an ideal one, inasmuch as it gives access for the removal of infected glands in the neighbourhood of the hyoid bone.

Wreden[5] reports a case of cancer of the larynx removed under **Local Anæsthesia.** The substitution of local for general anæsthesia in this operation is advocated, because of the frequency of post-operative pneumonia which follows laryngectomy, in spite of the latest forms of cannulæ with tampons, which are employed during this procedure when chloroform is given. In the case reported, the patient received one gram of a 1 per cent solution of morphine and 0·0012 gram of scopolamine, fifteen minutes before the operation. The first step was tracheotomy under cocaine. Then the larynx was removed according to Billroth's method from below upward, a 1 per cent solution of cocaine being injected into the lines of insertion of the muscles to be divided, and into the mucous membrane of the larynx along the incision. Altogether twelve hypodermic syringefuls of this solution were used. The operation was entirely painless.

More recently still, Semon[6], in his address on cancer of the larynx, delivered before the Laryngological section of the New York Academy of Medicine, has presented the most complete *resumé* of the present position of thyrotomy, as opposed to total or hemi-laryngectomy in the operative treatment of intrinsic laryngeal cancer. He refutes the contentions of John Mackenzie, stated in 1900 and maintained in 1902, *viz.*, (1) That the naked eye method of diagnosis is a comparatively neglected method; (2) That the microscopical examination of a fragment intralaryngeally removed is to be totally rejected; (3) That the early total extirpation of the entire organ with its tributary lymphatics and glands, whether the latter be apparently diseased or not, is the only possible safeguard against local recurrence or metastases; and (4) That thyrotomy is not up-to-date surgery, is in direct defiance of the rules that should govern us in the treatment of laryngeal cancer, and is a reversion to, and a resurrection of a method of procedure that was discredited and abandoned half a century ago. The statistical

results obtained by Semon, to which reference is made above, are sufficient refutation of these views. After summarizing his views on diagnostic points, in reference to the choice of method of operation, Semon, concludes that: (1) The intra-laryngeal method is from its very nature unsuitable for the radical removal of malignant new growths of the larynx; (2) Sub-hyoid pharyngotomy, apart from being applicable in a very small number of cases only of malignant disease of the larynx, is still *sub judice* with regard to its advisability in such cases; (3) Thyrotomy, if undertaken in suitable cases, and at a sufficiently early period, and if performed on the modern lines which experience has shown to be successful, is a perfectly ideal operation in intrinsic cancer of the larynx; (4) Hemi-laryngectomy comes into question only when it is found after opening the larynx that mere thyrotomy will not suffice. When performed, it may be accompanied by removal of the tributary lymphatics, even if apparently not diseased; (5) Total laryngectomy should be exclusively reserved for extrinsic and for those cases of intrinsic cancer in which both sides of the organ are affected, and in which the disease has proceeded too far to be eradicated by milder measures. When performed, it should be accompanied by the removal of the laryngeal lymphatics on both sides of the neck.

**X-rays, and High Frequency Currents,** were applied in a case of carcinoma of the larynx by Dobson[7] with very considerable benefit. The patient, a male, aged sixty-four, when seen in February, 1901, had a stony-hard, round swelling the size of a Tangerine orange, on the right side of the larynx, with an enlarged gland under the angle of the jaw, and other smaller but enlarged glands. The diagnosis of carcinoma was confirmed by de Havilland Hall and Butlin, but it was considered too far advanced for operation. In October tracheotomy had to be performed. The growth was thenceforth exposed to the X-rays for five minutes daily. Almost immediate improvement took place, and he daily gained weight; the cachexia disappeared, and strength increased from hardly being able to cross the room to walking two or three miles. The glands as well as the tumour diminished in size, till in May, 1902, it had shrunk to the size of a large walnut. In June considerable œdema and redness appeared in the larynx and side of the neck, and the X-rays were discontinued, as the skin ulcerated. The neck healed, and the X-rays were resumed, at first with improvement, but soon the skin gave way again. High frequency currents were then used daily for half an hour. The patient continued in good health, and the growth remained quiescent, till in March, 1903, the tumour regained its former size and soon began to break down, the patient dying from hæmorrhage in August, 1903. The authenticated diagnosis renders this case of great interest and importance, as the patient, apparently dying, was enabled to live in comparative health and comfort for nearly two years. The author

remarks that as long as the X-rays could be continued, it seemed that the growth would be arrested and cured, and that although the high frequency currents assisted to keep the patient in health, they did not seem to have the same power of arresting the growth.

References.—[1]*Gaz. d. Hóp.* lxxv, p. 1385; *Brit. Med. Jour.* April 25, 1903; [2]*Clin. Jour.* Aug. 19, 1903; [3]*Brit. Med. Jour.* Nov. 28, 1903; [4]*Ibid*, Oct. 31, 1903; [5]*Vratch*, March 6, 1904; [6]*Lancet*, Nov. 5, 1904; [7]*West Lond. Med. Jour.* Jan. 1904.

**LARYNX (Tuberculosis of).** *P. Watson Williams, M.D.*

*Hypertrophic Laryngeal Tuberculosis.*—That hypertrophic, or as he prefers to call it, hyperplastic tuberculosis of the larynx, presents peculiar features rendering the early diagnosis difficult, was forcibly brought to the notice of Treisen[1], who contributes a valuable review of the various published cases. Treisen's case, though proved *post-mortem* to be one of pulmonary and laryngeal tuberculosis, had only a few months previously been diagnosed by a competent laryngologist as pachydermia laryngis, and published as such. Treisen contends that the laryngeal tumour, which existed near the processus vocalis, should have been differentiated from pachydermia by the absence of the usual depression on the surface of the nodule, which is caused by the pressure of a nodule directly opposite on the other cord during pronation, which is *characteristic* of pachydermia: and he cites Fränkel, Virchow, and Symonds as having described this depression as characteristic. As both laryngeal tuberculosis and malignant growths may bear a fairly close resemblance to the harmless inconvenience of a mere pachydermia, we have felt that it is of practical moment to direct attention to the question, and emphasize the importance of this differentiating point.

Treisen concludes that: (*a*) The characteristic circumscribed tuberculous hypertrophies and tumours of hypertrophic or hyperplastic tuberculosis of the larynx must be considered a distinct and unusual form of the disease; (*b*) As a rule, there is no ulceration, but there may be some late in the course of the disease; (*c*) Though ulceration may be present, the circumscribed hypertrophies and tumour formations do not break down; (*d*) It is practically always secondary to pulmonary involvement, though there appears to be some evidence in support of the statement that this form of tuberculosis may at times be primary.

Treatment.—The use of the galvano-cautery as a routine method of treating suitable cases of laryngeal tuberculosis, is recommended by Grünwald[2] from an extended clinical experience. Its value depends upon the fact that by means of the puncture the treatment is carried to the deeply infiltrated tissues. Galvano-puncture does not irritate the healthy mucous membrane surrounding the tuberculous lesion, and consequently does not produce the annoying and baneful disturbances arising from most local applications. In using this

method the tissues to be punctured are first anæsthetized, and then the small platinum point of the cautery, at white heat, is pressed into the tissue until the healthy portion is reached; this is determined by a feeling of resistance which is encountered the moment that sound tissue is reached. The entire puncture takes from five to ten seconds. Three or four punctures are thus performed at one sitting, and four to six sittings are usually required to treat thoroughly all the diseased tissue.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* Nov. 1903; [2]*Münch. Med. Woch.* June 23, 1903; *Med. Rec.* July 18, 1903.

**LEG, Fracture of.** (*See* FRACTURE).

**LEISHMAN-DONOVAN BODIES.** *J. W. W. Stephens, M.D.*

These bodies were discovered by Leishman in May, 1903, in a film of splenic blood (*post-mortem*) taken from a case of so-called Dam-dam fever[1]. They had apparently been seen by Cunningham[2] in the granulation tissue of tropical ulcer in 1885. Wright[3] in December, 1903, described parasitic bodies in the lesions of tropical ulcer. Also Marchand and Ledingham[4] in 1904 published a description of bodies they had seen in 1902 in sections of spleen, liver, and bone marrow, in a patient suffering from irregular fever and enlarged spleen, and who had previously been in the tropics. In July, 1903, Donovan[5], in Madras, found these parasites in blood taken by splenic puncture from patients suffering from fever and other symptoms which we shall subsequently describe at length. These bodies were also investigated by Ross[6], Laveran and Mesnil[7], Manson and Low[8]. The most important description of them we owe, however, to Christophers[9], who has made a special study of them in India. It will have been noted from the above historical survey that the parasites have been found in two different situations, *viz.*, (1) Splenic blood of certain "fever" patients, and (2) So-called tropical ulcer. Before proceeding further we should add that the parasites have also been found in various tropical sores known as Delhi boil, Aleppo button, Scinde sore, etc. We must therefore consider the relation of these tropical sores to the febrile cases in which these parasites are found. Suffice it here to say that, so far as our present knowledge extends, the parasites from the different sources are identical.

In India there occur in the hospitals a large number of cases which have up to the present been classified as cases of "malarial cachexia and enlarged spleen." Stephens and Christophers[10], in Oct 1901, examined over eighty of these cases, and found malaria parasites in none, nor were the subsidiary signs of malaria present, *viz.* pigmented leucocytes, or an increase in the percentage of large mononuclear leucocytes; consequently there was no evidence in these cases of a recent malarial infection. It is cases of this kind in which the new parasites have been found by splenic puncture. It is probable that

they are identical with so-called Dam-dam fever, and indeed with that somewhat dubious entity *kala-azar*, for in all these cases, by whatever designation they are known in different localities, these parasites have been found.

*Geographical Distribution.*—While these cases are exceedingly common in probably the whole of India, and indeed constitute no small portion of those usually classified as malaria, yet similar cases have also been recorded from Egypt and North Africa and China, but at present we have no means of estimating their frequency outside India.

*Races affected.*—Rogers, in Calcutta,[11] observed cases in Hindoos, Mohammedans, Chinese, Burmese, and also among Europeans.

*Characters of the Fever.*—These may be described as follows :—

1. Great enlargement of the spleen ; usually greater than what is met with in malaria. The spleen commonly reaches the umbilicus, and not rarely the pubis. Donovan[12] states that the size of the spleen varies with the temperature, and it may temporarily disappear beneath the ribs during the periods of a pyrexia. Parasites are found even in those spleens projecting only a few inches beyond the costal border.

2. Emaciation is usually present in well-marked cases, but it may not exist even in fatal ones.

3. The most constant type is an irregular pyrexia, reaching 103° to 105° F. It may show an undulant character : *i.e.*, periods of pyrexia followed by periods of apyrexia. Even in advanced cases, it may be only slightly marked, or absent. The pyrexia is uninfluenced by quinine, though Rogers states that this is not absolutely true.

4. Abdominal symptoms are common, at least in the cases described by Christophers in Madras, though Rogers states that in kala-azar this is not such a common complication. Diarrhœa is frequent, with mucus and blood in the stools. The condition is dependent on ulceration of the gut, and it is important to notice that parasites are found in the ulcers, often in large numbers. The practical importance of this condition is further emphasized by the fact that in three out of seven cases recorded by Christophers, death was due to perforation of the gut. *Amœba coli* may also be present in the ulcers.

5. Local phagedænic processes, *e.g.*, cancrum oris, noma vulvæ, are not uncommon complications and causes of death. Local phagedænic ulcers are also met with, and gangrene of the gut may lead to a fatal issue.

*Skin Eruptions and Lesions.*—A papular eruption in the region of the thighs and scrotum is common in advanced cases. Papules are also found in the trunk and limbs. Small ulcers also occur, only a few mm. in diameter, and others much larger. It is difficult to distinguish these papules from those found in patients not suffering from the disease. There is, however, this important difference between the two, that parasites are found in these lesions, but not in similar ones in patients not suffering from a general infection with the parasite.

*Hæmorrhages.*—Epistaxis, bleeding from the gums, and purpuric eruptions occur, and *post-mortem* the serous membranes are often affected.

*Post-mortem Lesions.*—The spleen is much enlarged, and of firm consistence. It may or may not be pigmented. The liver is not much if at all enlarged, but shows, on cutting into it, an arborescent appearance due to the deposit of white tissue (macrophages containing parasites) in the centre of the lobules. The appearance of both the spleen and liver, when removed from the body, is very characteristic. They retain their natural shape due to their firm consistence. The large intestine shows almost constantly extensive multiple ulceration. Cancrum oris, noma vulvæ, purulent peritonitis, broncho-pneumonia, septic infarcts, etc., are commonly met with.

*Nature of the Parasite.*—It is unnecessary here to discuss the views held as to the nature of these bodies. Rogers has, however, shown that by mixing the splenic blood from a case of kala-azar with a little citrate of soda to prevent coagulation, and keeping the mixture at 22° C., there occurs multiplication of the parasite, and eventually conversion into a flagellate resembling a trypanosome. *but with no undulating membrane.* We must not however hastily conclude that these are cases of trypanosomiasis similar to those of Africa, and expect to find trypanosomes in the blood in India: the observation only shows that this protozoan (as it presumably is) has a flagellate stage. That the parasite suggests a relationship to trypanosomes, we shall see when we come to study its morphology, but it would be an error in our present state of knowledge to call these cases, cases of trypanosomiasis.

*Appearance of the Parasites.*—In fresh specimens they require very careful observation for detection, and should not be confused with platelets. They are somewhat more refractile than the latter, and have a slight greenish tinge. In specimens stained with Romanowsky stain they appear with great distinctness, and their appearance is characteristic. It may be well here perhaps to describe the Romanowsky stain for those not familiar with its use. *Solution A:* Methylene blue (*medicinal*) 1 part, carbonate of soda 0·5 part, water 100 parts. Keep the solution in the sun, or in a warm place for a day or so, until it turns red; it is then, but not till then, fit for use. *Solution B:* Eosin (pure for blood work) 1 part, water 1000 parts. Dilute each of these stock solutions twenty times approximately. To stain, mix equal parts of the diluted solutions, and pour on the slide. Stain for about twenty minutes. Wash in water.

The parasites thus stained are small round or oval bodies 2 to 3 μ in diameter. They are characterized by the possession of *two* chromatin masses, a large and a small. The appearance of these irresistibly recalls the large mass (nucleus) and small mass (blepharoplast) seen in a trypanosome. The two chromatin masses are usually situated opposite to one another in the long axis of the parasite. The small

mass is rod-shape or dot-like, and is usually placed laterally in the protoplasm of the parasite, displaced by the "vacuole," which fills a considerable portion of the body substance. (*See Plate XXIV*).

The protoplasm stains pink or blue, and there is often a "tail" of protoplasm stretching between the large and small chromatin mass. Some few of the bodies appear to be free, but the majority occur in a substance which had been thought to be altered red cell stroma, but which Christophers has shown to be really fragments of leucocyte protoplasm, more especially that of large mononuclear cells and macrophages; for when these parasites are studied in sections it is found that none occur free or in a stroma, but solely in the protoplasm of mononuclear and endothelial cells. In splenic blood films large numbers of parasites are found occurring together in the stroma, or zoogloea mass as it was originally called; but in sections this is not seen, and in carefully made films the parasites will be found occupying either polynuclear leucocytes (one or two parasites), large mononuclear leucocytes (one to six), endothelial cells (twelve or more), and large cells with vacuolated protoplasm, macrophages (several hundreds).

*Division forms.*—The parasite is roughly speaking cockle-shaped, and forms are found in which the division has already taken place in the large nuclear mass before it has begun in the small. As many as half a dozen bodies result from division, and they are found in little masses, the large nuclei arranged peripherally and the small centrally.

*Distribution of the Parasites in the Body.*—(1) In the peripheral blood they are excessively rare, even when the temperature is high, 104° F, though Donovan states that when the temperature is above 103° F. he has found them. (2) In splenic blood they are generally to be found in large numbers, but it is noteworthy that unless the aspirated blood contains some spleen pulp, the number of parasites found may be quite scanty. (3) In blood got by puncture of the liver they may be abundant: they are also found in the portal vein *post-mortem*.

*Distribution of the Parasites in the Tissues.*—(1) Parasites occur in immense numbers in the spleen, liver, and bone marrow; to a less extent in the lungs and testis. They occur also in the suprarenals and lymphatic glands. They can be easily found in these situations by making smear preparations of the organs, but their relationship to the cells is best studied in sections. For these a modified Romanowsky stain must be used, or they may be also demonstrated by staining with hæmatein or hæmotoxylin. (2) In the granulation tissue of ulcers of the skin and intestine parasites are also present, in the skin in scanty numbers, but in the intestine they may be very numerous. A study of sections shows that the parasites are exclusively *intracellular*, and they are found in cells of various types: (*a*) Endothelial cells. The cells are either retracted or have elongated processes which suggest amœboid movement; (*b*) Large cells with large nuclei (macrophages). The parasites may be extremely numerous in these cells, which are often

PLATE 24.

## LEISHMAN-DONOVAN BODIES.

FIG. A.
Small form of parasite.

FIG. B.
Large form of parasite.

FIG. C.
Parasite, showing tail joining chromatin masses.

FIG. D.
Parasite with no "vacuole."

FIG E.
Developmental form, showing formation of three bodies.

FIG. F.
Developmental form, showing formation of many bodies.

FIG. G. A macrophage, containing malarial pigment in addition to the parasites.

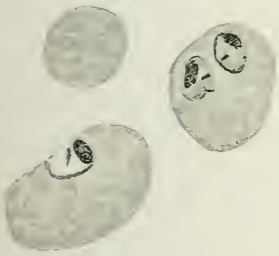

FIG. H.
Forms apparently in altered red corpuscles.

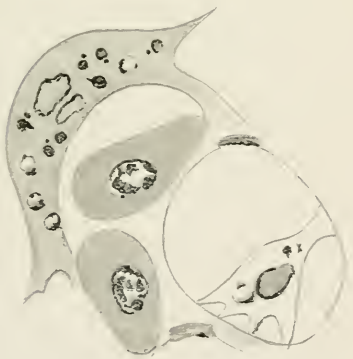

FIG. K. Section of Liver, showing macrophages (containing parasites) in the capillaries.

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reduced to a mere sac distended with parasites. We have then two conditions under which these parasites are found: in "tropical ulcer." which is regarded by Christophers as a local invasion by the parasite of the nature of a granuloma; and secondly, a systemic infection of the nature of a septicæmia, involving chiefly the visceral endothelia. The endothelial cells become so distended that possibly they eventually rupture, and so the freed parasites are able to infect new cells.

*Mode of Entry of the Parasite.*—Of this we know nothing. though many methods naturally suggest themselves, and among the most probable that of entry through the gut. We have already confirmation of Rogers' observation on the flagellate stage. and the problem is thus nearer solution.

REFERENCES.—[1]*Brit. Med. Jour.* May 30, 1903; [2]*Sci. Mem. by Med. Officers of the Army of India,* 1885; [3]*Jour. of Med. Res.* vol. x, No. 3; new series, vol. v, No. 3, Dec. 1903; [4]*Lancet,* Jan. 16, 1904; [5]*Brit. Med. Jour.* July 11, 1903; *Ind. Med. Gaz.* Jan. 1904; [6]*Brit. Med. Jour.* Nov. 14, 1903; [7]*C.R. de l'Acad. des Sci.* Dec. 7, 1903; [8]*Brit. Med. Jour.* Jan. 23, 1904; [9]*Sci. Mem. by Officers of the Med. and Sanitary Departments of the Government of India,* Nos. 8 and 11, 1904; [10]*Rep. to the Royal Soc.* March 6, 1902; [11]*Brit. Med. Jour.* Sept. 17, 1904; [12]*Ibid.*

**LEPROSY.** *J. W. W. Stephens, M.D.*

Rost[1] states that he has succeeded in growing the leprosy bacillus. He considers that the presence of chloride of sodium prevents the growth, and uses media especially prepared in order to free them from salt. He distils for instance beef-extract, using the distillate as a culture medium. From the cultures he prepares **Leprolin.** The leprosy bacillus is grown at 37° C. for four to six weeks in the special medium, the culture fluid is filtered and glycerin added to it. This fluid causes leprosy patches to become inflamed and swollen, and the body reacts with a rise of temperature. By treatment in this way ulcers heal and sensation returns. In a later communication[2] Rost gives an improved method for preparing leprolin, and records further beneficial results. It should be noted that with the leprolin is combined treatment internally with **Salt**, and externally with **Salt Ointment.**

REFERENCES.—[1]*Ind. Med. Gaz.* 1904, p. 167; [2]*Ibid,* p. 203.

**LEUCOPLAKIA.** *Norman Walker, M.D.*

Barnard[1] instances the case of a woman aged fifty, non-smoker, and with no alcoholic or syphilitic history, in which this condition appeared on the tongue. She had been subject to attacks of acute glossitis recurring on the top of this chronic condition. The attacks were found to be due to carious teeth, and were prevented by the use of antiseptic **Tooth-washes** coupled with the painting on of **Chromic Acid** solution (7 grs. to 1 oz. water). In the treatment of these chronic patches the chief object is to maintain the *status quo*, and to operate whenever signs of cancer, *e.g.*, warts, ulcers, or ulcerated fissures, or nodules appear.

Rosenheim compares this condition with tylosis *palmar. et plantar.*

Keratinization occurs in both, and also infiltration of the corium and submucosa, with young round cells. Both are the result of irritation, and it is probable that the mucous membrane of persons developing leucoplakia is peculiarly susceptible, just as the skin of certain individuals is delicate and prone to the development of certain skin diseases. In one case he mentions chewing and keeping the "quid" of tobacco in one place, as the probable reason.

Local treatment consists in removing irritation, the avoidance of mercury, the use of **Mouth-washes** of chlorate or bicarbonate of potash, and the painting on of **Chromic Acid** 10 grs. to 1 oz. of water. If the epithelium is much thickened :—

| | | | |
|---|---|---|---|
| ℞ Acid salicyl. | 0·5 to 1·0 | Spt. vini rect.<br>Aq. destil. | āā 10·0 |

Should be painted on every day.

REFERENCES.—[1]*Polycl.* April, 1904 ; [2]*Johns Hop. Hosp. Bull.* Feb. 1904.

**LEUKÆMIA.** *Prof. A. H. Carter, M.D., F.R.C.P.*

Moorhead[1] describes some investigations he has made on the etiology of leukæmia. He found that extracts from glands obtained *post mortem* from a case of lymphatic leukæmia, when injected into rabbits, reproduced all the characteristic changes observed in that disease ; whereas similar extracts prepared from normal glands were without effect. The former produced a notable fall in blood pressure, whereas the latter gave no such result. He concluded, therefore, that the morbid glands contained some specific substance (not as yet isolated) which might prove to be the specific toxin of the disease.

Goldhorn[2] states that leaving out the *pseudo-leukæmia infantum* of von Jacksch, there are two distinct forms of leukæmia, which he calls lymphatic leukæmia and myelogenous leukæmia, so omitting the usual addition of "spleno" on account of the not infrequent involvement of the spleen, in the lymphatic variety. If one divides the leucocytes into two great classes, the hyaline and granular ones, he says that in the myelogenous leukæmia there is an increase in the granular varieties, and in the leukæmic one an increase in the hyaline forms, with a probable exception of the mononuclears and transitionals. The myelogenous form was a new growth of the centres of the bone-marrow which gave origin to the granular leucocytes of the blood, and the lymphatic form a hyperplasia of those centres which supplied the blood stream with lymphocytes. Both could form metastases like malignant new growths, the pathological changes in the viscera depending upon them. Just as no two cases of carcinoma with metastases were alike, so no two cases of leukæmia were alike. Recognizing that leukæmia was not a disease of the blood proper, it was to be expected that the changes in the red blood and the plasma would vary as the nature and seat of the metastases varied.

*Acute Myelogenic Leukæmia.*—Acute leukæmia is nearly always of the

lymphatic type. The case, therefore, of acute myelogenic leukæmia reported by Billings[3] is worth noting. The blood picture of the disease may be summed up as follows :—

1. Anæmia, progressive and severe.

2. A large increase of white blood corpuscles (16,000 to 540,000).

3. A large proportion of the white cells (25 to 96 per cent) made up of myelocytes, large mononuclear cells of the same size, and faintly granular large mononuclear cells (transitional cells).

4. Eosinophiles, mast-cells, and nucleated red corpuscles may be absent or present in varying numbers.

Banti[4], like other writers, recognises a lymphatic and a myelogenic type of leukæmia, but he regards the changes in the organs involved as neoplastic and sarcomatous in nature, rather than hyperplastic. The grounds on which he relies are the atypical character of the new tissue, both in the quantity of its cells and the reticulum ; its tendency to invade neighbouring tissues ; its invasion of the vessel-walls and the destruction of vascular endothelium, and the occurrence of metastases. The difference between the two forms of leukæmia, according to this view, lies in the starting point of the new formation. In the lymphatic form, it begins in the lymphatic organs, while in the myelogenic form it begins in the marrow. Thus, the extra white cells which are found in the blood are not lymphocytes and myelocytes, but neoplastic sarcomatous cells ; and the author defines leukæmia as a systematic lymphadenoid sarcomatosis of the lympho-parietic and hæma-poietic organs. Banti also defines a pseudo-leukæmia (lymphatic and myeloid), differing only from true leukæmia in the fact that the new formation has not invaded the vascular endothelium, and that consequently, no cells actually pass into the circulation.

*Anæmia Pseudo-leukæmia Infantum, or the Splenic Anæmia of Children.*—Drysdale and Thursfield[5] raise the question as to whether this is a disease *sui generis*, or a mere complication or sequel of severe anæmia occurring in infancy. They adopt the former view.

References.—[1]*Med. Press*, Dec. 16, 1903 ; [2]*Med. Rec.* April 23, 1904 ; [3]*Amer. Jour. Med. Sci.* Sept. 1903 ; [4]*Med. Chron.* May, 1904 ; [5]*Lancet*, Feb. 13, 1904.

**LICHEN.** *Norman Walker, M.D.*

Sack[1] describes two cases of primary lichen planus in the mouth where there was no concomitant skin eruption. The condition is apt to be mistaken for syphilis, but a lichen patch is hard, with a porcelain-like mosaic appearance ; further, there are no enlarged glands, and the surrounding mucous membrane is healthy, which is not the case in specific disease. Treatment is unsatisfactory ; arsenic has little effect.

Eddowes[2], noticing the disturbance of the sweat apparatus in lichen planus, thought it might depend on diminished physiological acidity, and acting on these lines found **Boric Acid Ointment** give very good results.

Carle[3] reports cure in ten out of twenty-one cases and benefit in eight more by the use of **Oil of Cade.** The method he adopts is to rub it in as an ointment for five minutes every night very thoroughly, and then to cover the part with gauze. Equal parts of the oil and lanolin, or cocoa butter and vaselin, forms the best strength; when weaker, the result is not satisfactory. Itching is relieved after four or five applications have been made, and soon after, the infiltration and pigmentation gradually disappear. The time required to effect a cure varies from one to four months, and some of the cases were of eight or ten years' standing.

Martin J. E. Engmann[4] gives notes of a case of bullous lichen planus, which he accompanies with photographs and reports of microscopic examinations. The bullæ could be produced by friction, but only when preceded by a local pruritus. Treatment by doses of one-third of a grain of **Protiodide of Mercury** cured the condition.

References.—[1]*Deut. Med. Woch.* Dec. 3, 1903; [2]*Brit. Jour. Derm.* June, 1904; [3]*Lyon Méd.* Oct. 18, 1903; *Ther. Gaz.* Feb. 15, 1904; [4]*Jour. of Cut. Dis.* May, 1904.

**LIVER (Surgery of).** *A. W. Mayo Robson, F.R.C.S.*

*Resection for Gumma.*—The case of gumma of the liver forming the basis of a paper by Haubold[1], presents some interesting features with regard to the difficulties in arriving at a conclusion respecting the exact pathological process under observation after exploratory incision, and emphasizes how difficult it is to give a scientific and consistent prognosis in a given case until all the means to this end have been employed with care and deliberation. It also shows that an extensive portion of the liver may under certain conditions be removed, without the occurrence of alarming or uncontrollable hæmorrhage; a consideration which has no doubt frequently deterred surgeons from making an attempt at enucleation of neoplasms in this situation.

With regard to the results of resection of the liver for neoplasm, an analysis of 96 cases collected by Anschütz[2] shows the following. Of the total 96 cases, 75 recovered, 17 died from the operation. Of 10 done by excision, tamponnade and compression, 1 died; of 7 done by thermo-cautery, all recovered; of 25 done by excision and deep ligature, 2 died; of 6 done by preliminary clamping and excision, 2 died; of 20 done by intrahepatic ligature and excision, 6 died, and of 24 done by elastic ligature, 6 died. Of the entire number, 12½ per cent were done for gumma, a fact showing that the admonition expressed by Anschütz had not been regarded very frequently, probably for the same reasons which obtained in Haubold's case. Of these 12 cases, 2 died; 4 were excised, and the bleeding controlled by tampon—all recovered; 1 excised and the liver wound closed by suture—which recovered: 7 were removed by elastic ligature—2 died; and 2 were excised after preliminary intra-hepatic ligature—both recovered.

I have removed a cancerous portion of the liver associated with cancer of the gall bladder and bile ducts, on 12 occasions, with 10 recoveries, and 5 of the patients are now well 5½, 5, 4½, 4, and 1¼ years respectively after operation. This shows that primary cancer of the gall-bladder extending to the liver is not by any means a hopeless disease, though it is undoubtedly much better to prevent the onset of cancer by treatment of gall stones before the more serious disease has developed.

*Abscess of the Liver.*—The five cases of abscess of the liver lately under treatment in the Royal Naval Hospital, Haslar[3], are of sufficient interest to be recorded as examples of the different forms that may be met with in England in men who have returned from the tropics. A study of them also shows emphatically the value of systematic examinations of the blood for the presence of leucocytosis, which is a constant and most important diagnostic sign in the detection of these deep-seated abscesses; they also point to the great value of a free examination of the part by a well-devised open operation; for though a cure may take place by natural means—that is, by spontaneous rupture and evacuation through the lung, as in case four—yet such an eventuality is most frequently the commencement of a prolonged course of hectic fever, and often death from intercurrent pulmonary complications. In all five cases there was found a history of dysentery, but in none had it been of a severe character.

The surgical treatment of abscess of the liver is still one over which there is much difference of opinion, but the value of the **Free Incision** is steadily gaining ground, when instead of stabbing the organ in the dark, as is so frequently done, it is attacked either through the chest walls and pleura, or directly from the abdomen, with greater chances of rapid and successful results. In cases four and five we see how exploratory punctures failed entirely to find the abscesses, which fortunately then burst upwards into the right lung, and in one, apparently ended most satisfactorily for the patient. Though he felt quite well, with the temperature and respiration normal, yet there remained at the right base a patch of consolidated lung ready to give trouble with any extra cold, etc. The other still continues to spit up small quantities of liver-pus, eight months after the rupture, and is cachectic and unfit for duty.

R. J. Godlee[4] recommends the lower axilla as the best site for incision. Lieutenant Colonel J. Maitland[5] points out that puncture alone is attended with considerable risk, and quotes a death due to this procedure. He states that the best operation is through the pleura, and he excises a portion of rib, suturing the pleural surfaces together, then the diaphragm and peritoneal surfaces, if no adhesions are present, and he finally enlarges the liver opening with forceps, before introducing two drainage tubes. If opened through the abdomen, the peritoneal surfaces should be stitched together, or the

part be well packed before opening the abscess. He condemns *in toto* Manson's operation. Captain Keble, R.A.M.C.[6] recommends the open operation, and washes out the cavity. In two of his cases there was no rise in the temperature, or other clinical signs of liver abscess. Lieutenant-Colonel Hatch, I.M.S.[7] states, from an enormous experience at Bombay, his belief that puncture of the liver is dangerous, and recommends free incision, preferring to open between the ribs without resection, and without washing out; neither does he stitch the pleural surfaces. He also states that he has seen no bad results from the escape of the pus into the abdominal cavity. Captain Leonard Rogers, I.M.S.[8], from his experience at Calcutta, only found pyogenic organisms in the pus in 8 out of 24 cases, but demonstrated amœbæ in the walls of the abscess in 16 out of 17. This comparative sterility of the pus may perhaps explain why secondary peritonitis is so uncommon. In two out of the three unruptured abscesses, a pure culture of the colon bacillus, but no amœbæ, was found. In a case[9] where amœbæ were present in the liver pus, the pus was found to be sterile from other organisms.

*Cirrhosis.*—Successful cases of treatment of cirrhosis of the liver with ascites by means of epiplopexy, are constantly being recorded.

The etiology of the hypertrophic forms of cirrhosis of the liver has never been clearly defined, although, in addition to alcohol, certain vague toxic products of faulty metabolism are assigned a prominent rôle in the causation. Infectious cirrhosis and that due to chronic congestion of the blood-vessels are also mentioned. Another form, cirrhosis from chronic obstruction of the bile ducts, is only casually referred to by most clinicians, and yet it is frequently observed as a result of neglected gall-stone disease.

The treatment of such biliary cirrhosis is that of the primary condition; removal of the obstruction and re-establishment of the patency of the common duct. It will be found by experience that, in nearly all cases, the best results are obtained by opening the common duct high up and instituting hepatic drainage. In other cases a fistulous communication between the gall bladder and bowel may suffice.

Finally, it must be acknowledged that an obstruction to the common duct by a stone, or its results, should never be permitted to exist for the time sufficient to cause destruction of the liver cells. The diagnosis of cholelithiasis having been made, with or without jaundice, an operation should be urgently advised and at once performed. The time has arrived when the sequelæ attendant upon neglected gall-stone disease, such as chronic gastric affections, pancreatitis, and biliary cirrhosis, should be met with in but few cases, and the responsibility for these complications rests to a great extent with the medical men.

*Actinomycosis of the Liver.*—Auvray[10] points out that hepatic actinomycosis, though rarely observed, is a subject of practical interest, as this affection has, in some instances, been brought within the range

of surgical treatment. His paper is based on an analysis of 31 cases, collected from medical literature. There are, it is stated, two forms of actinomycosis of the liver—one primary, the other secondary. The latter is the usual and by far the most frequent form. Actinomycosis in the liver is usually manifested by one or more abscesses, each containing a thick, grumous, and sometimes ill-smelling pus, including the characteristic yellow corpuscles, and presenting under the microscope the specific mycelial forms, together with the usual microbes of secondary infection. As the disease develops, the affected liver contracts close and extensive adhesions with the surrounding parts, and breaks down into numerous suppurating cavities, the fluid contents of which spread far and wide in the abdominal cavity amongst the adhesions, and make their way sometimes into the intestinal canal, sometimes through fistulous tracks formed in the anterior wall of the abdomen. The disease invariably results in death, due in most cases to exhaustion from prolonged suppuration, and occasionally to peritonitis, actinomycosis of other organs, and metastatic suppuration.

Six cases have been collected in which actinomycetic abscesses of the liver were dealt with by surgical operation, the diseased part having been attacked four times by the abdomen, once from the lumbar region, and once through the pleural cavity. All terminated fatally, but in every instance death occurred after a long interval, and was due to some concomitant lesion either in the liver itself or in remote viscera, unrecognized at the time of the intervention. The author concludes that, notwithstanding the bad results in this small series of operations, if it be possible to diagnose actinomycosis before the beginning of suppuration, when the disease is manifested in the form of an actual tumour, resection would be just as much demanded for this as for other morbid growths of the liver.

I have operated on a case of actinomycosis of the gall-bladder and adjoining part of the liver with success, and the patient is now quite well. The abscess was evacuated and packed with iodoform gauze, and **Iodide of Potassium** was given as soon as the patient was able to take it, and continued until cure was complete.

REFERENCES.—[1]*Ann. Surg.* 1904; [2]*Ibid*, Feb. 1901; [3]*Brit. Med. Jour.* Sept. 19, 1904; [4]*Ibid*, May 17, 1902; [5]*Ibid*, Feb. 22, 1902; [6]*Ibid*, Sept. 6, 1902; [7]*Ibid*, Dec. 6, 1902; [8]*Jour. Trop. Med.* Feb. 16, 1903; [9]*Lancet*, Aug. 1900; [10]*Rev. de Chir.* No. 7, 1903; *Brit. Med. Jour.* Aug. 22, 1903.

## LUMBAGO.

*Purves Stewart, M.A., M.D.*

Gowers[1] lays stress on the fact that the only nerve-endings associated with the afferent nerves of muscles are the muscle-spindles. These are situated in the interstitial tissue between the muscle fibres, and are therefore peculiarly susceptible to the influence both of contraction and of tension in the muscle. The characteristic pain of lumbago occurs when the affected muscles are voluntarily contracted or passively extended. And the pain is due to an inflammation of the interstitial

fibrous tissue in which the muscle-spindles are imbedded. To this inflammation Gowers applies the name "fibrositis." This view is further corroborated when we consider the frequency with which the pain of lumbago extends from the lumbar muscles into adjacent tendinous structures, and sometimes into the fibrous sheath of the sciatic nerve. The suddenness of onset of an attack of lumbago is often more apparent than real. The pain usually occurs on the first movement after a period of rest. It is never spontaneous, thereby differing clearly from the pain of neuralgia.

Analogous to lumbago, and like it due to the same "fibrositis," is brachial muscular rheumatism, often extending into the nerve sheaths of the upper limb, and even to the joint capsules; also the familiar "stiff-neck," and a painful condition of the pharyngeal muscles rendering swallowing difficult; also the well-known pleurodynia, which is really an intercostal fibrositis, and occasionally a similar affection of the diaphragm. All these conditions, formerly classed together as varieties of "muscular rheumatism," are more common after middle life, and not infrequently associated with the gouty diathesis. Whilst the slighter forms of muscular fibrositis, such as lumbago or stiff neck, are usually of brief duration, that which involves tendinous structures often lasts for months. The duration of the affection seems proportional to the slowness of its onset, perhaps because slighter pain does not induce the patient to take needful rest.

Treatment of all these varieties of muscular fibrositis consists in free **Diaphoresis**, *e.g.*, by a Turkish bath, and **Rest**. Diaphoresis, to be of any good, must be employed at the very onset of the attack. **Hot Fomentations** are also very efficacious; massage and electricity should be avoided in acute cases. In more chronic varieties stimulating **Liniments** and gentle **Faradism** are beneficial. **Saline Aperients** are of the first importance. In the acute stage a mixture containing **Nitrous Ether, Citrate of Lithia,** and **Colchicum** is of value; salicylates have practically no effect. **Counter-irritation,** especially by the actual cautery, sometimes lessens the pain; Gowers also recommends deep daily hypodermic injections of **Cocaine** locally for two or three weeks.

Reference.—[1]*Brit. Med. Jour.* Jan. 16, 1904.

**LUMBAR PUNCTURE.** *Purves Stewart, M.A., M.D.*

Increasing experience of lumbar puncture confirms our opinion of its value, both as a diagnostic and a therapeutic measure. The main principles of cytodiagnosis were discussed by the writer in the *Medical Annual* for 1904. For diagnostic purposes we have found it of special value in early cases of tabes and general paralysis of the insane, and in the differential diagnosis of the various forms of cerebrospinal meningitis. Therapeutically, in addition to the indications mentioned in last year's *Annual*, withdrawal of cerebrospinal fluid has proved of remarkable benefit in cases of uræmic coma, either from acute or chronic nephritis, as in cases recorded by M'Vail[1], Peabody[2], and others.

Moreover, in the treatment of tetanus the introduction of **Antitoxin** in this manner has proved more efficacious than when administered by any other route (*see also* TETANUS). Babinski[3] has also demonstrated the remarkably beneficial effect which abstraction of 15 to 20 cc. of cerebrospinal fluid produces in certain cases of auditory vertigo and tinnitus.

The writer of this review has had under his own observation several cases of tuberculous meningitis, in which the performance of lumbar puncture and withdrawal of cerebrospinal fluid were not only of diagnostic value, but produced a marked, though temporary, alleviation of the terminal coma. In two cases the patient was already comatose and obviously moribund, and the relief of intracranial pressure which followed the operation of lumbar puncture was such that consciousness returned for a considerable number of hours. Apart from the satisfacton afforded to friends and relatives, the medico-legal importance of such a lucid interval, *e.g.*, for testamentary purposes, is obvious.

REFERENCES.—[1]*Brit. Med. Jour.* Oct. 24, 1903; [2]*Med. Rec.* Jan. 23, 1904; [3]*Ann. des Mal. de l'Oreille*, Feb. 1904.

**LUNG (Abscess of).** *Priestley Leech, M.D., F.R.C.S.*

Williams[1] publishes three cases of abscess of the lung. One was a tuberculous abscess diagnosed as an empyema, and operated on with success, the patient dying three years later of acute tuberculosis of the left lung. There was no communication between the bronchus and the abscess. The second followed fibrinous pneumonia; operation was refused and delayed, the patient dying probably from rupture of the abscess into the abdomen. The third was a case of abscess following septic embolism after premature labour; the abscess was opened after excision of a piece of rib, and although the patient was in a very weak and grave condition, perfect recovery ensued.

Dr. James[2] in a clinical lecture on empyema and bronchiectasis, draws attention to the necessity of an extensive **Resection of Ribs** for the healing of a large bronchiectatic cavity, as in an old-standing empyema. The fibrosed lung round a bronchiectatic cavity being allowed to contract by the establishment of drainage, separates itself from the parietal pleura to which it has been previously bound down by adhesions, and so tends to produce a pleural cavity which much resembles an empyema. If extensive rib resection be not performed, as time goes on there is great difficulty in introducing the drainage tube into the lung cavity through the pleural opening.

Cavazzani[3] reports 11 cases of lung abscess with 13 operations, of these only 3 died; the prognosis is better in single than in multiple abscesses; before finally closing the wound the danger from entrance of air may be considerably lessened by withdrawing air by means of a syringe, or the air may be displaced by filling the empty spaces with saline fluid.

REFERENCES.—[1]*Brit. Med. Jour.* Jan. 2, 1904, p. 8; [2]*Ibid.* p. 5; [3]*Rif. Med.* May 11, 1904; *Brit. Med. Jour.* Aug. 13, 1904.

**LUPUS ERYTHEMATOSUS.** *Norman Walker, M.D.*

E. Hollaender[1] discusses the etiology of this disease, and the arguments for and against it being tubercular. Since it is superficial, he considers it would be difficult to find bacilli, and his hot-air cauterization method would be sure to destroy these; but it has no effect on this condition. He finds a successful treatment is by **Quinine** internally and **Iodine** externally. The patient is first tried to see if he can take quinine, and then it is pushed to 7½ grs. t.i.d., and five or ten minutes after the dose, the area is painted with iodine. This is continued for six days, and after a pause repeated. In his opinion ultimate success is always ensured.

The writer has reported[2] some success in this intractable disease by simple exposure to the **Arc Light** of the London Hospital lamp. The patients were exposed for about half-an-hour daily, at a distance of about one foot from the lamp, and generally a week or two elapsed before any change was noted. Some cases improved wonderfully; others were little influenced. Harrison of Bristol has also had good results with the method.

REFERENCES—[1]*Berl. klin. Woch.* July 28, 1902; [2]*Scot. Med. and Surg. Jour.* June, 1903.

**LUPUS VULGARIS.** *Norman Walker, M.D.*

Malcolm Morris[1], in a *resumé* of the methods of the last twenty-five years, says "I have treated my cases in the spirit of Lord Strafford's principle, 'thorough.' I have scraped, scarified, burnt, applied caustics, injected tuberculin, used light and the X-rays, given thryoid and urea, fed my patients with raw meat, etc., with a zeal born of the 'wish to believe which theologians tell us is the basis of faith.'" Most methods have advantages, but most too have disadvantages, and the secret of success lies in the judicious adaptation of the treatment to the character of the disease and the condition of the patient."

Roughly the cases may be divided into types: (1) When the disease is superficial and spreads very slowly; (2) When the local infectivity is more active, a large area of skin is invaded, and the deeper layers involved; (3) When it is part of a general infection spreading along the blood stream, and in which numerous foci are present. Again, a distinction can be made between those with and those without constitutional symptoms caused by the tubercle bacillus or its toxins. He sums up: "My experience, like that I suppose of every other dermatologist, is that while small, superficial patches are curable by almost any of the recognized methods, when the disease is at all extensive it often resists all kinds of treatment."

Chemical caustics he now uses only after light or X-ray treatment, or when these latter agents are inapplicable; **Salicylic** or **Pyrogallic Acids,** or both, are used. **Lactic Acid** finds its sphere of usefulness on ulcerated surfaces. The **Galvano-cautery** is the best agent in small areas, where Finsen or X-rays cannot be used. Its value, owing to its

precision, is great, and there is no risk of local inoculation. It should be at white heat, and only small patches done at one sitting. **Scraping** is used to remove excess of tissue as a preliminary to newer methods ; **Excision** where a scar is no detriment and the area is small.

**Finsen Light.**—After an experience of four and a half years, he states that while not infallible, this gives more satisfactory results than any other treatment. A wise insistence is laid on active supervision and reliable nurses, as a perfunctory application does more harm than good, for its stimulates instead of destroying the disease. Of 65 cases treated up to June, 1903, 11 were cured. He uses **X-rays** in ulcerating and œdematous areas, and after these have been healed the disease is finally eradicated with **Light treatment.** On mucous membranes it is used because light cannot there be applied. His experience is as follows :—

1. Cases of small extent in which no scarring procedure has been employed are eminently suitable to light or X-ray treatment, but preferably the former.

2. Cases of small extent with a dense fibrous cicatrix resulting from previous treatment. Both light and X-rays are slow, owing to fibrous tissue interfering, and repeated applications without allowing healing to take place are more efficacious, though painful.

3. Cases of large extent in which lupus is relatively superficial, or the nodules are more or less discrete ; here it is best to begin with X-rays and finish with Finsen light.

4. Cases of large extent, in which there is a dense mass of lupus infiltration and fibrous tissue, are not affected much by X-rays or Finsen light ; and excision or scraping, followed by these, is best.

5. Lupus of mucous membranes may be treated by X-rays, but relapses are frequent.

**Tuberculin** modifies the local disease, and makes it more amenable to local treatment. He concludes by asserting that we cure more curable cases now, and with less disfigurement ; but there are many cases still incurable. As to what *is* a real cure, he suggests that a duration of years is our only safe guide.

Sequeira[2] considers scraping as probably the worst surgical procedure, as it opens up lymphatics, and may disseminate the disease, and in all cases it should be followed by cauterization. **Light Treatment** should be carried out by one of the original Finsen or the newer Finsen-Reyn lamps, as they only have sufficiently penetrating power. Painting with 1 per cent **Erythrosin** increases the actinic effects of the rays ; 216 cases have been discharged as cured at the London Hospital.

Gustav Kaiser[3] records successful results by passing electric light through **Blue Glass** ; he finds this plan valuable also in lupus erythematosus.

Thornton[4] finds that lint soaked in 1–500 **Biniodide of Mercury,**

covered with jaconette and changed twice daily, gives prompt and excellent results. If this causes pain it may have to be weakened.

Jamieson[5] out of 133 cases, has obtained favourable results chiefly by means of **X-rays.** One case developed tubercular peritonitis after exposure. X-ray treatment was afterwards resumed, but in a few weeks another tubercular focus appeared at the right hip. This suggested to his mind the possibility of X-rays setting free the bacilli into the circulation, but he does not consider that such is really the case.

References.—[1]*Lancet*, Oct. 22, 1904; [2]*Brit. Jour. Derm.* Oct. 1904; [3]*Med. Press*, July 15, 1903; [4]*St. Mary's Hosp. Gaz.* April, 1904; [5]*Scot. Med. and Surg. Jour.* Feb. 1904.

**MALARIA.** *J. W. W. Stephens, M.D.*

Prophylaxis.—Ed. and L. Sergent[1] criticize Koch's method of prophylaxis by means of quinine. They state: (1) That the microscopic diagnosis of latent malaria is impossible among such a population as that with which they dealt in Algeria, for the population is always more or less cinchonized, and so parasites may not be found, yet relapses may occur. (2) That the toxic effects of the prophylactic dose [Koch's dose is 1 gram (15 grs.) on two consecutive days every tenth and eleventh day] were too marked in those to whom they administered it. (3) The actual administration of the prophylactic (over how long a period is not stated) did not prevent relapses among chronic cachectics (two cases) and two young children. They consider, however, that the method should be used as an adjuvant to other methods.

In a second paper[2] they describe the methods of prophylaxis adopted by themselves, which comprised wire-gauze protection and oiling of sources of larvæ. By a combination of these methods they reduced the number of cases among fresh arrivals from 35·2 per cent in 1902 to 6·45 per cent in 1903. Among the old chronic malarial cases the number of relapses was reduced from 93·4 per cent in one year to 47·4 per cent in the following, though it is not quite evident how the methods of prophylaxis could affect *relapses*, which presumably, as such, could only be affected by quinine.

Stephens[3] discusses the question of malarial prophylaxis. Of nearly a hundred species of anophelines we so far know only in the case of less than a dozen that they actually do convey malaria. It is generally assumed that all do; but not only have we no proof of this, but we have proof in the case of a few that they do not. Those that we know with more or less certainty do carry malaria, are: *A. maculipennis*, *A. bifurcatus*, *P. superpictus*, *M. pseudopictus* in Europe, *P. costalis* and *M. funesta* in Africa, *M. listoni* and *M. culicifacies* in India *A. maculipennis* in N. America, *C. albipes* in West Indies. The evidence that certain anophelines do *not* convey, is based mainly on the work of Christophers and Stephens, who examined two species of

anophelines caught in the same native huts at the same time. Their results were as follows.

| | Number Dissected | Number Infected | Percentage |
|---|---|---|---|
| In Mian Mir: | | | |
| M. culicifacies ... | 250 | 12 | 4·6 |
| M. rossii ... ... | 496 | 0 | 0 |
| In Ennur: | | | |
| M. culicifacies ... | 69 | 6 | 8·6 |
| M. rossii ... ... | 364 | 0 | 0 |

So that *M. rossii* was not carrying malaria under conditions where *M. culicifacies* was. So far these results hold good, and nobody has succeeded in showing that in nature *M. rossii* can carry malaria.

Hirshberg in the United States has got similar results by feeding experiments. The conditions were identical for the two species used :—

| | No. fed | No. infected |
|---|---|---|
| A. maculipennis ... | 48 ... | 8 |
| A. punctipennis ... | 58 ... | 0 |

The practical bearing of these results is obvious. *M. rossii* is universally distributed in India and the East, it breeds in dirty pools and small collections of water, in contradistinction to *M. culicifacies*, which never breeds under these conditions, but in fresh running water, small rivers, canals, etc. Consequently if these results be true, from the point of view of malaria it is unnecessary (at any rate primarily) to attack these puddles, myriads of which occur in the rainy season ; and money, time and energy can be devoted to the real cause of the evil, in this case the breeding-grounds of *M. culicifacies*.

The main prophylactic measures are as follows :—

1. *Anti-larval.*—This should take the form of draining and "oiling" pools, and should only be resorted to as a temporary measure.

2. *Mechanical Prophylaxis.*—Wire netting has given good results in Italy, Japan, and elsewhere. The objections to this method are obvious. Certain climates are so hot and "steamy," that living inside a "meat safe" is almost unbearable. There are, however, other climates where netting may be advantageously used, but such measures should only be temporary. Care is also required to make certain that anophelines do not enter.

3. *Quinine Prophylaxis.*—Here also good results have been got, *e.g.*, by Koch's gram prophylactic dose. A gram is taken on two consecutive days, on every 10th and 11th day. The method is limited in application, and seems to fail when applied to large bodies of men. But perhaps the conditions are hardly those which one would demand for a

fair trial, for it is well known to all except those who shut their eyes that troops contract malaria in some cases solely while visiting native bazaars, as their barracks may be quite free from anophelines.

4. *Segregation.*—This method was advocated by Stephens and Christophers in 1900. They had shown that the flight of anophelines was generally a short one, in many cases only a quarter of a mile, or less than half a mile from the native huts, which are the great source of *infected* anophelines in the tropics. They had observed many instances where complete protection was afforded to those living even a quarter of a mile from the vicinity of native huts. Thus the centre of Freetown, *e.g.*, Government House, contains no anophelines, though these exist in myriads a quarter of a mile away. At Accra the official quarters are mostly well protected, the nearest village being half a mile away from the majority of the bungalows. Now the conditions under which colonists live in the out-stations up country, in the hinterlands, etc., are the exact reverse of this. Their houses are practically always surrounded by native quarters, and the result is the continuous and severe fever seen among Europeans living under these conditions. The danger is due often to the presence of three or four native huts near the European bungalow. The reason is that the native children, apparently healthy, contain almost universally parasites in their blood, and by these the anophelines in the huts are infected, and these eventually reach the susceptible European. I can well recall two Europeans living in a compound with twenty huts surrounding them. These Europeans constantly suffered from fever, which could have been completely avoided, either by destroying the huts, or by building European quarters a short distance away. Here a hundred yards would have given complete protection, as the camp was surrounded by thick jungle, through which anophelines do not as a rule penetrate.

By segregation, then, is meant the building of European quarters remote from the native. This is easily done, though it necessarily entails some expense. Thus a tea-planter should not live as he often does now, twenty yards from his coolie lines, but as far away as he can, and protected as far as possible by screens of bamboo, banana, and so forth. It is a mistake to cut down jungle indiscriminately in the belief that "jungle" harbours mosquitoes. The effect of so doing may be disastrous, *viz.*, to give a clear passage to anophelines from without, which otherwise would have remained in the native huts. In its complete development, segregation implies the construction of a European cantonment and distinct native quarter, a condition which prevails over the greater part of India. When this has been effected, tropical Africa will cease to be that terrible "white man's grave" which it now is. This policy is being followed, and we have a segregated colony in the hills of Freetown, reached by a railway. In Accra and Cape Coast Castle, segregated sites occur. At Akassa the natives have been bought out and removed a mile away from the European houses,

and we understand that as soon as Europeans are convinced of the desirability of forming a quarter of their own, on representation to the Government, financial assistance will be given them.

With regard to the anti-larval operations, and the attempts to carry them out which we shall now mention, we would first consider how we should best estimate the success or failure of these operations, and may note in passing that if an operation is "successful" it is not critically inspected; but if a failure, it is riddled with criticism by those who from a safe position in an editorial office could have done the thing far better themselves! For estimating the success or failure of a measure, *i.e.*, has the malaria been diminished or not, the most exact method in our possession is that of determining what Christophers and Stephens have called the "endemic index." We have already seen that in malarial countries the apparently healthy children contain parasites sometimes to the extent of 100 per cent, sometimes only 10 per cent, etc. It is the *young* children especially that contain them, and it was found that above the age of ten the number decreases rapidly. Consequently the percentage under ten years of age of those who contain parasites is taken; this is the *endemic index*. The age of five might have been taken, or any other, but ten is convenient, and naturally, when making comparisons of this sort, the ages should be as much alike as possible, and every age should be noted down at the time, so that one would not be led astray by comparing children of ten years in one village with those of two years in another. By investigating the blood of children in this way, remarkable variations in "malarial endemicity" are found, and it is the easiest and best way of getting a true idea of the intensity of malaria in any place. Further, the monthly variations in malarial intensity can be readily followed by this method, and we have in it, finally, a simple and satisfactory way of estimating whether anti-malarial operations have had any effect whatsoever. Hospital statistics are notoriously untrustworthy, and require very careful scrutiny to know what they really represent. So that finally, in carrying out an anti-malarial campaign we should determine carefully the "endemic indices" of the native population in the district to be undertaken. Control observations should be made in areas where no operations are to be carried out: this is a very necessary, but generally omitted precaution. The endemic indices within the area should be determined month by month, and finally when the operations are complete, the index should show a marked fall (but the control none) if the measures have had any real result.

Bearing these facts in mind we may now consider some "anti-malarial campaigns."

James and Christophers[4] describe the result of the anti-malarial operations at Mian Mir, Punjab, which were carried out persistently for two consecutive years. The result was a failure to make any appreciable effect on the malaria among the troops in that cantonment.

Every effort was made to destroy larvæ in the irrigation canals, in a section of the cantonment to a large extent isolated from the rest. Some of those who have criticized the experiments, consider that the failure was due to the fact that the experiment did not comprise the whole of the cantonment, *four miles* in length! To conduct anti-larval measures over an area four miles in length is easy to talk about, but a visit to Mian Mir would perhaps alone show what an immense task that would be. The authors, however, attribute the want of success not so much to the fact that larvæ were not destroyed, for they were, in myriads, but to the fact that anophelines "filtered" in to the cantonment from villages a mile or two away. This was an unexpected event, and contrary to what previous knowledge of the flight of mosquitoes had led one to expect. Among their conclusions are: (1) It is easy enough to destroy larvæ in millions, and to do away with hundreds of breeding-places, but it by no means follows that malaria is diminished or adult *anopheles* banished, and the success of operations on a large scale is still very doubtful; (2) The idea that by destroying breeding-places around a barracks, prison, or other building, a reduction in malaria is likely to result, requires more critical study before it can be accepted; (3) The occasionally reported cases where a brigade has rid a town of malaria, we have no hesitation in challenging as absurd. We are by no means so certain that the number of *culex* and *stegomyia* may not be very considerably affected by such means; (4) The only really satisfactory test of success is a reduction of the endemic percentage of infection.

Ross[5] criticizes the experiments made at Mian Mir from two points of view: (1) That the mosquitoes were not really destroyed to the extent claimed, and that the tests used for determining success or otherwise were not accurate enough; (2) That admitting the thoroughness of the work and the validity of the tests, then the operations were not carried out for a long enough period or over a large enough area.

Sewell[6] also discusses the Mian Mir experiment and considers: (1) That the area selected for the experiment was too small, for he states that any factor which affects the rest of the station is bound to affect a part of it. Of this he furnishes no evidence, and there are many instances to the contrary, where local destruction of mosquitoes and protection from them is possible even where mosquitoes occur in myriads in houses and huts less isolated than the huts adjacent to the area in Mian Mir: (2) Any plan which aims at the reduction of malaria in Mian Mir must have as its basis the entire abolition of the irrigation systems. This criticism is beside the mark, for it must be remembered that the experiment was an anti-larval one. Of course removal of the irrigation canals is a policy that may or may not be advisable, but it has nothing to do with the "anti-larval experiment" at Mian Mir. (3) Nothing short of the complete levelling and drainage of the whole cantonment and *its environments*, and the total abolition of irrigation

and irrigation channels in and around the station, is at all likely to cause any appreciable difference in the amount of malaria in Mian Mir. If this be true it will take much time and much money. The anti-larval experiment at Mian Mir, however, was initiated with a view to testing the effect of anti-larval operations, and these were in a measure successful. The experiment could not wait for the complete levelling and drainage of Mian Mir and its environments. The failure was due to infiltration of anophelines from without, and also there seems to be no certainty in the case of Mian Mir that, even if the canals were drained, anophelines would not still filter in from without from the infected villages. This point careful preliminary observation must decide. One factor largely lost sight of in the discussion evoked by the experiment, is the source of malaria in Mian Mir in the bazaars and native lines. That source of infection is largely under control, and the health of the troops would greatly benefit by a removal of native quarters from the proximity of European barracks.

Boyce[7] records the result of anti-malarial measures at Ismailia. The diminution in malaria was from 1555 cases in 1902 to 55 in 1903! The area dealt with was apparently very small, and most of the work was directed against mosquitoes other than anophelines. No data are given as to the results on the anopheline larvæ, or on the endemic index.

Adie[8] confirms the observation of many observers, that pools and tanks covered with *lemna minor* do not harbour mosquito larvæ. He attributes the fact to the mechanical protecting action of the lemna, the water being "completely hidden"; as when he made clear areas in a lemna-covered pool, he found that anophelines deposited their eggs. He recommends the cultivation of this lemna in pools.

Mine[9] gives the result of mechanical prophylaxis of the Japanese troops in Formosa. All windows and houses were gauze-protected; further, the sentries at night wore gloves and veils. The following tabular statement will best show the striking result.

| | Percentage of Fresh Attacks | | |
|---|---|---|---|
| Half Company protected (3 experiments) | 0 | 0 | 0 |
| Half Company unprotected (3 experiments) | 338 | 93 | 386 |
| Three Companies unprotected (3 experiments) | 443 | 120 | 230 |

On **Quinine Prophylaxis** in the tropics Ziemann[10] publishes a full account of his observations, and sums them up as follows:—

1. Of the "regular prophylactics" 16 per cent remained entirely free from fever, of the "irregular prophylactics" 1.4 per cent, and of the "non-prophylactics" 0.0 per cent.

2. In 23.0 per cent of the "regular prophylactics" there was only one very slight attack of fever. In a further 24.6 per cent of the "regular prophylactics" the fever quite disappeared after a stricter prophylaxis.

3. Of the "regular prophylactics" 89.8 per cent remained fit for

tropical service; of the "irregular prophylactics" 67·1 per cent; of the non-prophylactics only 12 per cent.

The prophylactic dose in these experiments was 15 grs. (1 gram) every four days.

Besides malaria, Ziemann calls attention to that deadly enemy of the white man in the tropics, *drink*.

Berg[11], using "the gram" prophylaxis every seventh and eighth day in S. W. Africa, obtained "the most gratifying results." Blümchen[12] using Koch's gram prophylactic dose every eighth and ninth day, has "most strikingly good results." Maas[13] using "Plehn's prophylactic dose," ½ gram or 7½ grs., every five days, comes to the conclusion that it is not effective in this amount.

Kunst[14] has investigated the efficacy of **Aristochin** in malaria. His results were controlled by microscopical examination of the blood. Aristochin is a tasteless quinine preparation, and in doses of 15 to 45 grs. produces no unpleasant symptoms, even in those very sensitive to other quinine salts. The conclusion reached was that aristochin is a powerful remedy against malaria.

*Discoloration of the Tongue in Malaria.*—Lofton[15] states that in malaria pyramidal patches of discoloration may be seen on the tongue, which he says are diagnostic of malaria. They begin about the papillæ, and extend to one inch from the tip of the tongue. They are about $\frac{1}{16}$ to $\frac{1}{8}$ of an inch wide and ½ to 1 inch long.

*Survival of Larvæ.*—Jennings[16] believes that young larvæ of culex can resist desiccation in dried mud. He thinks that they can tide over a period of as long as three months after complete desiccation. The larvæ which hatch out when "dried" mud has water added to it, are two to three days old. It is important in experiments of this kind to determine the genus and species of mosquito, for data which may be true of one species do not necessarily hold good of another. For instance, most anopheline larvæ will not resist desiccation for more than four days, and the period is less than this if the mud is thoroughly dried.

REFERENCES.—[1]*Ann. de l'Inst. Pasteur*, 1904, p. 2; [2]*Ibid*; [3]*Brit. Med. Jour.* Sept. 17, 1904; [4]*Ibid*; [5]*Ibid*; [6]*Ibid*; [7]*Liver. School of Trop. Med.* Memoir xii; [8]*Ind. Med. Gaz.* June, 1904; [9]*Arch. f. Schiff. u. Trop. Hyg.* Jan. 1904; [10]*Ibid*, p. 371; [11]*Ibid*, p. 409; [12]*Ibid*; [13]*Ibid*; [14]*Ibid*; [15]*Med. Times*, Nov. 1903; [16]*Ind. Med. Gaz.* Jan. 1904.

**MAMMA.** (*See* BREAST).

**MARASMUS** (Infantile). *G. F. Still, M.D.*

Probably there are few disorders of infancy which cause more anxiety to the medical man than marasmus. R. Hutchison[1] points out that marasmus is not a disease in itself, but a symptom. It may be due to insufficient feeding. In some cases the child is unable for some reason to suck freely: a stomatitis, or any form of nasal obstruction, or such conditions as harelip and cleft palate, may interfere with sucking; sometimes so easily remedied a cause as an

unsuitable teat may be the cause of the child not obtaining sufficient nourishment; more often it is due to persistent indigestion. Apart from these causes, and from the wasting which accompanies organic disease, such as tuberculosis or syphilis, there would appear to be such a condition as "athrepsia," or marasmus which is not dependent upon any discoverable cause. As the infant becomes more and more exhausted, the temperature is liable to rise suddenly, sometimes as high as 108°. Hutchison states that he had never known a case which developed such hyperpyrexia to survive more than a few hours.

Variot[2] has drawn attention to the way in which the weight of an infant will sometimes remain stationary for months, during convalescence from severe digestive troubles. One infant remained at the same weight for eleven months, another for six months, in spite of the complete cessation of all other symptoms of gastro-intestinal disturbance. In most of these cases no alteration of food had any influence in increasing the weight, but after a variable period the infant began to gain weight without any apparent cause for the improvement. In one, however, the increase of weight dated from the day on which feeding with sterilized milk was changed to suckling by a wet-nurse. In others, the improvement coincided with a change from sterilized milk to humanized milk which was not sterilized. Similar observations are recorded by Hutinel[3], who saw not only infants, but older children, remain at the same weight for long periods after various intestinal affections, especially if these had been prolonged. In his cases, also, the stools were normal, the appetite good, and the child bright and happy, and yet the weight failed to increase. Sometimes the beginning of the gain in weight corresponded to some change in diet; *e.g.*, chicken-broth, butter-milk, kephir, asses' milk, all seemed to have started the improvement in various cases. Guinon[4] thought that a stay in the country was often the surest starting-point for improved assimilation.

Undoubtedly in most cases of marasmus, as well as in those of delayed rise in weight, treatment resolves itself into finding the food which can most easily be digested; and in a certain proportion of them Hutchison[5] states that the only hope for the child lies in procuring a **Wet-nurse.** If the trouble is due, as it often is, to difficulty in digestion of casein, probably the best thing that can be done in many cases is to make **Whey** the basis of the feeding, and to add cream and raw meat juice, or white of egg, to rectify the deficiency of fat and proteid. A whey mixture prepared thus can be made a sufficient food for prolonged use. In other cases, **Peptonized Milk** seems to solve the difficulty. The same writer has found **Grey Powder** very effectual in cases where there is an obstinate failure to gain weight. He says that although it is by no means clear how it acts, and although there may be no suspicion whatever of any syphilitic taint, grey powder in many cases "seems positively to fatten the child."

The value of **Buttermilk** in these wasting infants has been repeatedly emphasized during the past few years, especially by continental writers. Sagher[6] reports a case of marasmus in an infant aged four months, who improved steadily on buttermilk, but showed digestive troubles again, directly an attempt was made to feed it on cow's milk. The feeding with buttermilk was continued more than five weeks, with only two or three days' intermission.

**Paraglandin,** a substance extracted from the suprarenal gland of the ox, has recently been used by Cattaneo[7] in cases of marasmus. The preparation is a white liquid of sweetish taste, and contains some ferment which has an influence upon metabolism, and prevents auto-intoxication. The dose used by Cattaneo was 40 drops given four or five times. No untoward symptoms were observed, and in four out of five cases there was some gain of weight. According to Nobécourt and Vitry[8] the addition of **Sodium Chloride** to the diet has a favourable influence on the weight. Some breast-fed children gained weight whenever this salt was administered, but not if the dose exceeded 15 grains in the day.

REFERENCES.—[1]*Clin. Jour.* March 4, 1903; [2]*Ann. Méd. et Chir. Inf.* May 15, 1904; [3]*Ibid;* [4]*Ibid;* [5]*Lancet,* Sept. 19, 1903; [6]*Ann. Méd. et Chir. Inf.* March 15, 1904; [7]*Assoc. Med. Chir. de Parma*; see *Brit. Jour. Ch. Dis.* July, 1904; [8]*Progrès Méd.*; *Brit. Jour. Child. Dis.* July, 1904.

**MASTOIDITIS.** *Hunter Tod, M.B., F.R.C.S.*

In cases where the patient refuses operation, Pomeroy[1] suggests that an attempt should be directed to overcome the bacterial infection. He considers the saturation of the system with **Sulphur** to be the best form of disinfection in the medical treatment of this disease. He gives **Calcium Sulphide** gr. $\frac{1}{10}$ to $\frac{1}{4}$, in pill form, three or four times a day, or 1 to 2 grains of the 1 per cent powdered hepar-sulphur every two to four hours in cases of infants. Alexander[2] recommends the application of great **Heat** in acute mastoid disease. In 18 cases, 8 recovered without operation.

In cases of acute middle-ear suppuration where paracentesis has already been performed, Lermoyez[3] gives the following indications for opening the mastoid antrum: (1) When pain persists, especially over the base of the mastoid; (2) If pus appears copiously after mopping out the ear; (3) If the pus comes away intermittently after attacks of pain; (4) If there are continued head or labyrinthine symptoms. Conservative treatment should only be tried for two or three days at the most.

The **Mastoid Operation** may be divided into two classes: (1) The simple Schwartze operation, where only the mastoid antrum and perhaps some of the mastoid cells are opened, without injuring the contents of the middle ear; (2) The complete or "radical" operation, where, in addition to opening into the antrum, the posterior wall of the external meatus, the ossicles (malleus and incus), and the outer

wall of the attic are removed, so that the middle ear, attic, antrum, and mastoid, eventually form one large cavity.

The **Acute Operation** by the general consensus of opinion is now only performed in the acute and subacute cases of mastoid disease. Occasionally one finds a perforation of the inner wall of the mastoid in its lower part, with the burrowing of pus below the muscles of the neck. This was first described by Bezold[4]. McBride[5], in dealing with such cases, clears out the antrum and all the diseased parts of the mastoid process, and then discovers the breach in the inner and lower wall. A long probe is bent and passed down into the abscess cavity in the neck, a counter-opening being made in the skin over the probe, which is made to project.

Hartmann[6], of Berlin, on opening the mastoid in acute cases, considers a free communication should be made between the antrum and tympanic cavity. Lermoyez also recommends the opening of all the mastoid cells. Only in those cases of abscess of the mastoid in which the internal wall of the abscess appears to be healthy, and in which there is no swelling of the posterior and superior wall of the meatus and of the upper part of the membrane, should we confine ourselves to the removal of the diseased bone. To effect a rapid and lasting cure, the opening of the cavity of the mastoid must be made very wide.

To aid rapid healing Clarence Blake[7] allows the wound to fill with blood and then to heal. In one instance this was accomplished in four days. McBride says he has never seen a case where it seemed justifiable to adopt this method.

Henry Gradle[8] considers that at least one-third of cases of acute mastoiditis subside gradually after three to four days, provided there is free drainage. Dundas Grant[9] thinks the acute operation is performed too seldom.

*The Complete Mastoid Operation.*—McBride recommends the use of Stacke's probe as a protection against injuring the facial nerve. Dundas Grant, in dealing with cases of cholesteatoma, retains the lining membrane of the cavity when it appeared complete and comparatively homogeneous, as, although it was not good skin, it was a fair substitute for it, and calculated to take the place of the skin graft. Prof. Hartmann tends to agree with Grant, but others oppose this view on the ground that the bone beneath the cholesteatomatous membrane is not healthy. Professor Delraux[10] does not believe in packing the mastoid cavity after the fifth day after operation. Cheatle[11] agrees.

*After-treatment.*—With regard to skin grafting, opinions still differ. Time has not yet proved whether the results are so permanent as first claimed to be. The general tendency now seems to be to limit its application. According to Hartmann, healing by means of skin grafts is not performed so frequently as formerly in Germany. Grant

favours grafting, especially in cases where the cavity is large. Tilley approves of separate grafts rather than one large one. Heath[12] objects to skin grafting as being unnecessary. In performing the complete mastoid operation he makes the post-aural incision close to the auricle, and removes as little bone as possible. The meatus is kept open by an indiarubber tube. The dressing is removed on the second day, and after the third day "spirit drops" are instilled hourly into the ear to prevent formation of granulation tissue.

*Paraffin in Mastoid Operations.*—In cases of acute mastoiditis, where a bridge of healthy bone intervenes between the abscess in the mastoid process and the antrum, rendering it unnecessary to open the antrum, Politzer[13] shortens the after-treatment by filling up the wound with **Liquid Sterilized Paraffin.** This is done at the end of the first week, when the wound surface is covered with healthy granulation. The edges of the cutaneous incision are then brought together. The paraffin method is not applicable if there is an opening into the antrum, as the molten paraffin may penetrate through the antrum into the tympanic cavity. Urbantschitsch[14] has also made use of this method to aid healing.

Douglas Drew[15] describes a modification of skin grafting. He cuts a graft according to the size of the cavity to be filled, and applies it to some soft and pliant material, so that it may be accurately and easily fitted into the cavity. He uses "court plaster," after first moistening it by holding it in steam for a minute. Before applying the grafts, the mastoid cavity is washed out with sterilized water and dried with gauze. The graft is applied through the external meatus, without re-opening of the post-aural wound, fourteen days after the primary operation. The cavity, after adjusting the graft, is closely packed with gauze. This is removed with the strapping at the end of ten days.

References.—[1]*Med. Rec.* March 12, 1904; [2]*Monats. f. Ohrenh.* No. 9, 1903. [3]*Ann. des Mal. des l'Oreille,* May, 1904; [4]*Deut. Med. Woch.* 1881; [5]*Brit. Med. Jour.* Oct. 31, 1903; [6]*Ibid;* [7]*Jour. Laryng.* 1899; [8]*Med. Rec.* April 16, 1904; [9]*Jour. Laryng.* Oct. 1903; [10]*Ann. des Mal. de l'Oreille.* Oct. 1903; [11]*Jour. Laryng.* Feb. 1904; [12]*Ibid;* [13]*Wien. Med. Woch.* No. 30, 1903; [14]*Monats. f. Ohrenh.* No. 49, 1903; [15]*Clin. Jour.* June 1, 1904.

**MEASLES.** (*See also* Scarlet Fever.) *E. W. Goodall, M.D.*

Marsden[1] draws attention to the variable length of the stage of invasion in measles. It is stated in most of the ordinary text-books to be four days, but in two cases related by Marsden it was six.

[I have known, not infrequently, the rash of measles to appear on the first day of the disease, at the same time as the other symptoms. Usually, however, the period of invasion, or prodromal period, lasts three or four days; but I have met with cases like those given by Marsden in which it has been of five, six, seven, or even eight days' duration. In the cases in which there is a prodromal period of any

length, an initial rash may show itself; this is usually a diffuse erythema, sometimes scarlatiniform. But it may take the form of urticaria. Another early symptom of measles is laryngeal catarrh; hence the disease at this stage is not infrequently mistaken for diphtheria. A profuse watery nasal discharge may also be an early sign. In cases with a long prodromal stage there may be a complete remission of all the symptoms after the first day or two. The disease, therefore, is at times very puzzling. Marsden does not mention one of the most characteristic signs, namely, the minute white spots that appear on the buccal mucous membrane, usually when the first symptoms of illness show themselves, long before, in many cases, the rash comes out—the so-called "Koplik's spots." These are of great value in diagnosis.—E. W. G.]

De Certant[2] gives an account of a case in which the initial laryngitis of measles lasted for fourteen days, without being at any time of such severity as to require surgical interference. He takes the opportunity of discussing the pathology of morbillous laryngitis, and comes to the conclusion (in which all who have had much experience will probably agree with him) that there are two forms of laryngeal obstruction in measles. The one is that met with in the early stage, before the rash comes out. Usually this is due to simple (as opposed to diphtherial) inflammation. It usually subsides on the appearance of the rash, and seldom requires intubation or tracheotomy. Very occasionally, however, the early laryngeal obstruction may be due to diphtheria. On the other hand, obstruction arising later, just as the rash is fading or during convalescence, is more serious, being not infrequently due to diphtheria.

Paton[3] recommends **Guaiacol Carbonate** given in powder every three hours, 10 grs. for adults, and proportionally for children, in measles where there is much respiratory catarrh,

References.—[1]*Brit. Med. Jour.* Dec. 26, 1903; [2]*Gaz. Hebd. des Sci. Méd. de Bord.* May 8, 1904; [3]*Lancet*, Nov. 21, 1903.

**MIDDLE EAR** (**Diseases of**). *Hunter Tod, M.B., F.R.C.S.*

Non-Suppurative Diseases.

The conditions included under this heading are divided by Professor Urban Pritchard[1] into the following heads: (1) Acute non-suppurative otitis media; (2) Chronic non-suppurative catarrh: (*a*) Early stages; (*b*) Advanced stages; (3) Middle-ear adhesions, the result of former inflammation; (4) Sclerosis, resulting from disease of the bony capsule enclosing the internal ear and forming the inner wall of the tympanic cavity.

1. *Acute Non-suppurative Otitis Media.*—In the earliest stages gentle **Politzerization** (not catheterization) will often at once relieve the pain and tend to cut short the attack. Also **Counter-irritation** behind the ear is of great value. **Instillations** into the external meatus are

occasionally advisable ; Hartmann[2] recommends a 10 per cent solution of **Carbo-glycerin** and Urbantschitch[3] **Thigenol,** using thigenol, 2 to 4 parts ; glycerin and alcohol, of each 10 parts. **Heat** in the form of very hot fomentations, or hot bran bag, is advocated by Pritchard[4].

**Incision of the Membrane** is called for when there is marked bulging of the membrane, but the meatus must first be cleansed, and afterwards dressed antiseptically, to avoid suppuration. As a **Local Anæsthetic** to render paracentesis painless, Brevre[5] recommends the instillation of the following drops : Liq. ac. carbol., menthol, cocaine hydrochl., pp. æq. Lewis[6] considers that if an acute middle-ear inflammation can be treated early enough, paracentesis may be avoided. He finds the greatest value in the use of the following drops :—

| | | | | | |
|---|---|---|---|---|---|
| ℞ | Cocaine hydrochl. | 1 part | Glycerin | 4 parts |
| | Adrenalin chlor. | 2 ,, | Aq. destill. | 30 ,, |

Sig.—Warm and drop in the ear every half-hour, or oftener if necessary.

Nasal douches or irrigations must be avoided. After the acute stage has passed off, Politzerization should always be employed to restore the hearing and prevent adhesions. Adenoids, if present, should then be removed.

2. *Chronic Non-suppurative Catarrh.*—In the majority of cases the process is a gradual one, beginning with repeated attacks of slight catarrh, which result in a simple chronic congestion of the mucous membrane of the middle ear and Eustachian tube. Later, as is always the case with prolonged congestion and low forms of inflammation, there is a deposition of new connective tissue. The hypertrophy may involve not only the mucous membrane of the tympanic walls and inner surface of the membrana tympani, but all the joint structures of the ossicular chain.

In these cases, deafness is not difficult to explain, for, as Kerrison[7] says, we have to consider two distinct lesions, either of which alone might cause deafness : (*a*) Owing to the pathological changes within the Eustachian tubes, these air passages are usually distinctly narrowed, or may be partially closed, with the result that the normal passage of air to the tympanic cavity is proportionately interfered with. The membrana tympani is forced inwards by atmospheric pressure from without, crowding the ossicles together and holding them in a state of partial fixation. (*b*) In addition to the above, we have the tympanic lesion itself to contend with.

As a further result of these pathological changes, adhesions may bind the ossicles together and to adjacent structures, and the contraction of the newly-formed connective tissue may finally convert the mucosa into a dry sclerotic membrane closely adherent to the tympanic walls. The same changes may occur in the Eustachian tubes, when they may become abnormally wide. It cannot be too forcibly stated that the earlier the patient comes under treatment, the more favourable the prognosis.

The principles of treatment are: (1) To restore the Eustachian tube to its normal tone and calibre; (2) To restore the tympanic mucous membrane as nearly as possible to a healthy condition; (3) To remove any abnormal condition of the upper air passage.

(*a*). In the *early stages*, in which there is exudation into the mucous membrane and from its surface, and hence stenosis of the Eustachian tube and more or less fluid in the tympanic cavity, Professor Urban Pritchard recommends **Politzeration** at intervals of one, two, or three days, so long as improvement is obtained, but it must not be continued when it increases the deafness; also the local use of sterile **Alkaline Nasal Irrigations,** and the **Inhalation** of pine oil, eucalyptus oil, or fumes of ammonium chloride. Climatic treatment is important. High, dry, and sunny positions should be selected.

In cases where, in spite of treatment, fluid remains in the tympanic cavity, **Incision of the Membrana Tympani** may be practised, the fluid being either sucked out by means of a Siegle's speculum, or blown out by gentle Politzerization. Adenoids and enlarged tonsils must be removed, and any nasal obstruction remedied.

(*b*). In the *advanced stage* the treatment is much less satisfactory, on account of the adhesions causing retraction of the membrane and fixation of the membrane and ossicles, and of the fact that the Eustachian tube may now be abnormally narrow. Here **Catheterization** is often preferable to Politzerization, but the value of repeated inflations has been much over-rated. Kerrison favours the use of **Stimulating Vapours**, such as menthol, ether, camphor, and iodine, which are projected into the Eustachian tube and middle ear through the catheter. Recently Adolph Bronner has advocated the use of the multi-nebulizer, an instrument which has been used for some years in America, and by means of which medicated vapour can be passed at a high and constant pressure into the middle ear. This method has undoubtedly given good results in some cases, where ordinary catheterization has had no effect.

Stoker[8] quotes a series of cases where he claims to have obtained some improvement after the use of **Ozone.** The beneficial effect of oxygen, and more particularly of its allotropic form, ozone, in restoring a healthy condition to diseased nasal mucous membranes, and in purifying the secretions, suggested a trial of the latter in chronic progressive deafness. The ozone is generated by means of an electric current acting on a Ruhmkorff coil, to which the ozonizing tube is attached. The ozone is passed in a gentle current through a Eustachian catheter into the middle ear for about four minutes at a time, the operation being repeated several times a week, daily if possible. The cases were nearly all those of a chronic dry catarrh of the middle ear.

The use of the **Eustachian Bougie** has its advocates, and opponents. Pritchard objects to its use owing to the risk of injury to the mucous membrane, and also from the fact that, in advanced cases, the loss of

hearing power is almost always due to changes in the tympanic cavity, and not in the Eustachian tube. Goldstein[12] believes that the bougie should be used regularly in every case of chronic middle-ear disease. He uses a graduated, olive-tipped, cold, polished, whalebone bougie. The value of its use is increased by immediate inflation. Contra-indications are a feeling of fulness and dulness in the ear, and increase of the subjective symptoms. Duel, of New York[9], also advocates the use of the electrolytic bougie in stenosis of the Eustachian tube in cases of hypertrophic catarrhal deafness, but this procedure has not as yet found very great favour amongst aurists.

Roosa[10] considers that the **Masseur** in addition to catheterization may be beneficial. With regard to internal medicinal treatment, occasionally, when the mucous membrane is glazed and dry, small doses of **Potassium Iodide with Ammonia,** so as to produce slight symptoms of coryza, combined with some form of inflation, will yield excellent results ; and **Turkish Baths** may be of value in some of the least advanced cases (Pritchard). Climate has less effect than in the earlier stages of the disease.

3. *Middle-ear Adhesions.*—The treatment of middle-ear adhesions of old standing is most unsatisfactory. Operative interference has as yet signally failed. Dench, however, recommends **Ossiculectomy,** but the general opinion is that such operations are inadvisable, if not useless.

4. *Sclerosis.*—With regard to the origin of this disease two different views stand prominently out : Either that the pathological changes are secondary to a former exhausted inflammatory affection of the middle ear, or that they arise primarily as an ossifying osteitis in the periosteum or the capsule of the labyrinth. Habermann and Katz and Chalmers Watson[11] are in favour of the former view, but Politzer localizes the commencement of the disease in the capsule of the labyrinth, and Liebenmann is convinced that the osteitic process takes its origin at the line of junction of the endochondral labyrinthine capsule and connective tissue bone which is formed secondarily from the periosteum.

All treatment by local measures, whether mechanical or operative (extraction of the stapes), has given very discouraging results. In view of the fact that local treatment, such as the air douches, catheterization, mobilization by massage, may under certain circumstances do mischief, they ought to be left off entirely when, after short trial, no improvement in the hearing for speech presents itself.

When, however, tinnitus is present, Denker[12] recommends, in agreement with most authors, the regular use of electrical-motor **Massage of the Membrane,** which may produce a temporary relief. Internally Politzer recommends **Iodide of Potassium,** 15 grs. daily. The improvement said to take place under thyroid extract, or the high-frequency electric current, has not been confirmed. Liebenmann

recommends the administration of **Phosphorus** in daily doses of $\frac{1}{60}$ to $\frac{1}{15}$ grain in cod-liver oil (Kassowitz's solution). Urban Pritchard confesses that in a pure case of sclerosis no local treatment is of any avail, and he relies on general treatment, such as **Iron** and **Arsenic**.

### Suppurative Diseases.

*Suppurative Otitis Media.*—Bardes[13], in a paper on "running ear," laments the fact that most people regard a discharging ear as an inconvenience, rather than an actual disease that may destroy one of their most useful faculties, and even menace their life.

In the first instance he advises the use of **Astringent Lotions**, beginning with a weak solution such as silver nitrate, grs. 5 to 8 to the ounce; zinc chloride, grs. 2 to 20; carbolic acid, grs. 10 to 100; formalin, grs. 5 to 40; and tincture of iodine, grs. 5 to 60. Active granulations are best destroyed by applications of **Chromic Acid**; while polypi are best removed by the ring curette. If the perforation in the membrana tympani is too small to allow of free drainage, it should be enlarged in the downward direction The best ear-drops for the patient's home use are a 20 per cent alcoholic solution of **Boracic Acid**. Powder should never be given to patients to blow into the ear; they are apt to blow in too much, and it may become caked, and obstruct the flow of the discharge. He condemns the indiscriminate syringing of suppurating ears, as few patients can use the syringe properly.

Chébayev[14] recommends as ear-drops: Resorcin and tinct. opii, each 60 cgrams; aq. destill. 4 grams. After cleaning the ear, 8 to 15 drops are to be dropped in and allowed to remain from fifteen to thirty minutes. A cure may be expected in three weeks from a daily treatment. The solution is also useful in otitis externa, and furunculosis.

For chronic otorrhœa Urbantschitsch[15] recommends: Thigenol, 5 parts; liq. hydrog. perox. (6 per cent), 10 to 20 parts; alcohol, 10 parts. **Thigenol**, he says, diminishes the secretion and pain, acts as an astringent, does not stain, is cheap and innocuous.

If, in spite of these milder methods of treatment, the discharge persists, Bardes favours **Ossiculectomy**. Foulder White[16] suggests the same treatment under the name of "otectomy." This operation of ossiculectomy (the removal of the membrane and the malleus and incus) is one which aurists have performed for years past, as a less extreme measure than the complete mastoid operation, in those cases where there is reason to believe that the disease is limited to the ossicles, attic, and inner wall of the middle ear. (*See also* Mastoiditis.)

### Otitis Media in Infants.

In a series of 100 *post-mortem* examinations made by Ponfick among infants under three years of age and dying of various acute and chronic diseases, and where otitis media was not suspected in the

majority of cases, it was found, however, to be present in all but 9 cases—unilateral in 13, bilateral in 73.

Leaven[17], in a paper on the subject, rightly insists on the importance of examining the ears in young children. He says that ear-ache in children is generally caused by acute inflammation of the middle ear, but in infants and young children, suppuration may exist without there being any rupture of the drum membrane. In infectious diseases of the gastro-intestinal and respiratory tracts of young children, otitis media nearly always is present, and probably stands in a causative relation to gastro-enteritis and broncho-pneumonia. Hartmann, of Berlin, is of the same opinion, and considers that in all cases of intestinal disorders in infants the ears should be regularly and carefully examined.

There is no doubt, according to Leaven, that the cause of death in many acute and chronic infectious diseases, in meningitis, and in the exanthemata, is the result of unrecognized and untreated diseases of the middle ear. In infants, a good inspection of the tympanic membrane is difficult, and even if pus be present, the membrane, if thick, will not necessarily show signs of acute inflammation; but in cases of doubt, a timely paracentesis can do no possible harm, and will often bring about immediate and surprising relief, even in those cases which were apparently suffering from definite meningitis.

References.—[1]*Brit. Med. Assoc. Meeting,* 1904; [2]*Deut. Med. Woch.* No. 17, 1904; [3]*Monats. f. Ohrenh.* No. 4; [4]*Jour. Rhin. and Otol.* July, 1904; [5]*Arch. Inter. de Laryng.* July, 1903; [6]*Buffalo Med. Jour.* March, 1904; [7]*Med. Rec.* Nov. 21, 1903; [8]*Med. Press,* March 16, 1904; [9]*Jour. Laryng. and Otol.* Nov. 1903; [10]*Post. Grad.* Jan. 1904; [11]*Lancet,* Jan. 9, 1904; [12]*Jour. Laryng.* Sept. 1903; [13]*Med. Rec.* March 5, 1904; [14]*New York Med. Jour.* July 25, 1903; [15]*Monats. f. Ohrenh.* No. 4, 1903; [16]*Pract.* Dec. 1904; [17]*Amer. Pract. and News,* Jan. 1903.

## MORPHIA HABIT.

*Robt. Hutchison, M.D.*

Goldau[1] considers that **Hyoscine** is a true specific in drug habits. It is analgesic and hypnotic, but only slightly narcotic, and replaces morphia and cocaine with little if any of the injurious properties of these drugs. It should be administered in small doses as the other drug is withdrawn, and it is rarely necessary to give more than $\frac{1}{100}$ of a grain at a time. Buchanan[2] also speaks highly of hyoscine, but believes that the dose should be small to begin with ($\frac{1}{200}$ gr.) in order to guard against idiosyncrasies. The first effect is to cause the patient to sleep, but after several doses have been given he becomes wakeful and restless, and in about twelve hours mild delirium sets in, which soon clears up, however, when the drug is discontinued, and leaves no bad after-effects. Altogether the patient is kept under the influence of the drug for about thirty-six hours, $\frac{1}{200}$ to $\frac{1}{100}$ gr. being given every two or three hours, according to his condition.

Crokers[3], on the other hand, considers that hyoscine is an uncertain and dangerous remedy, which is apt to produce a severe form of

delirium which may go on to insanity. Pettery[4], criticizing this statement, points out that these results are not observed if the administration of the remedy is continued for only a limited period. He has used hyoscine in the treatment of 500 cases of morphinism, with the most satisfactory results, and has never seen delirium persist for more than forty-eight hours after its discontinuance.

References.—[1]*Ther. Gaz.* Feb. 15, 1904; [2]*Amer. Jour. of Insanity*, April, 1904; [3]*Ther. Gaz.* June 15, 1903; [4]*Ibid*, Oct. 15, 1903.

**NÆVUS.** *Priestley Leech, M.D., F.R.C.S.*

A Frattini[1] employs a 6 per cent solution of **Corrosive Sublimate** in flexile collodion, and after shaking applies it so that it just encroaches upon the healthy skin surrounding the nævus; a current of air is blown over the collodion to accelerate evaporation, and prevent its spreading. The application is repeated every third day until the eschar is separated, and the raw surface is then covered with an antiseptic dressing. The same treatment has been successfully employed in anatomical tubercle of the skin.

Daraiquez[2] says **Ignipuncture** gives excellent results in the treatment of cutaneous angiomata. Once a fortnight is sufficient. The ignipuncture must penetrate the whole thickness of the tumour, and the various points applied during the treatment should be about a centimetre apart, or even more in spreading tumours.

Levack[3] reports three cases successfully treated by **X-rays.**

References.—[1]*Gaz. deg. Osped*, July 19, 1903; abst. *Brit. Med. Jour.* Oct. 17, 1903; [2]*Gaz. Hebd. des Sci. Méd.* Aug. 9, 1903; [3]*Scot. Med. and Surg. Jour.* July, 1904.

**NARES (Tuberculosis of).** *P. Watson Williams, M.D.*

Pathology.—The nasal mucosa affords pre-eminently the most frequently exposed site for the direct invasion of the tissues by the tubercle bacillus, yet it is the most rarely the seat of primary invasion by tuberculous disease of the whole respiratory tract. Primary tuberculosis does occur, though rarely; but secondary deposits are less rare, and are due to the conveyance of the bacilli to the tissues through the lymph channels, and perhaps by the blood-vessels. Knight[1], in a recent review of the subject, after dwelling on the above mentioned points, accounts for the infrequency of generalization by way of the meninges, by the fact that the flow of lymph is *from* the brain *towards* the nasal cavities.

Knight recognizes in the nose two stages of tuberculosis, that of infiltration, and that of ulceration. The former occurs either in a diffuse infiltration or as a circumscribed tumour. Ulceration is generally secondary to infiltration. The appearance of a typical tuberculous ulcer was usually pale, greyish, granular, with irregular "worm-eaten" borders, often thickened and dotted with translucent or opaque miliary tubercles, or it might be disguised by a profuse

proliferation of exuberant granulations. Free hæmorrhage was sometimes a marked symptom. It was more than likely that in every case there was a preliminary stage of infiltration, the ulcer resulting from disintegration of more or less extensive tuberculous foci.

As regards the *site* of nasal tuberculosis, the septum, the inferior turbinated, and the middle turbinated body was the order of frequency.

Treatment.—Knight advises that the morbid deposit, if circumscribed and accessible, should be extirpated with curette and caustics, provided the general condition of the patient and the existence of active lesions in other regions of the body do not forbid interference. Photo-therapy has hitherto given no satisfactory results except in lupoid tuberculosis, and in disease located near the *introitus nasi*. Although a rare disease, owing to various means of defence with which the nasal chambers are furnished, the obvious indication, especially as regards nurses and attendants upon tuberculous subjects, is to avoid causing an abrasion of the surface, which might become an open door to the tubercle bacillus.

Reference.—[1]*Med. Rec.* May 21, 1904.

**NASAL ACCESSORY SINUSES.** *P. Watson Williams, M.D.*

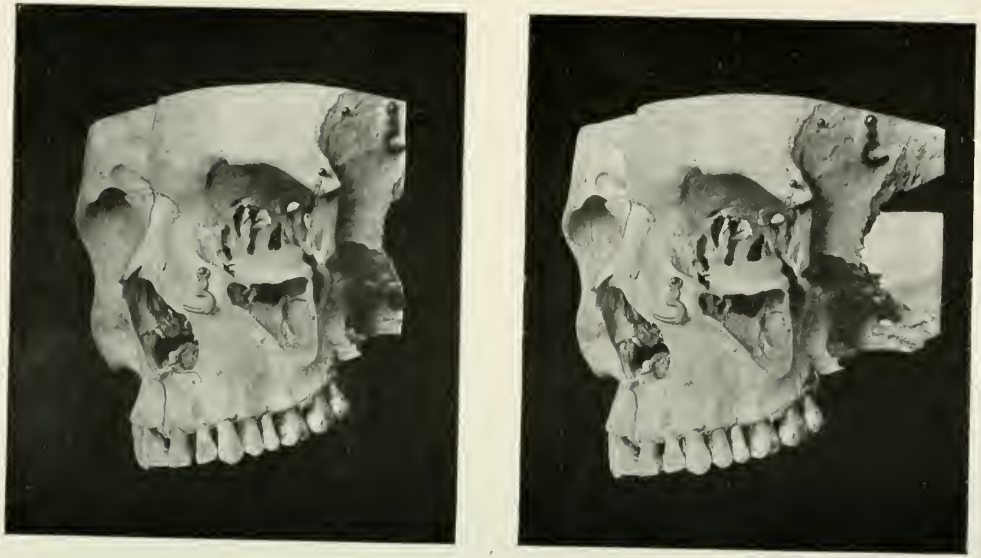
Excepting antral disease, diseases of the nasal accessory sinuses more usually than not affect several of them, though it undoubtedly does happen that suppurative disease may involve only the ethmoidal cells or the sphenoidal sinus. Tilley[1] considers that in connection with these chronic suppurative lesions two important questions demand an answer: *viz.*, What is the risk to life: (1) If the disease be left to take its course? and (2) If operative procedures of a radical nature be undertaken for its relief?

1. With regard to the first question, the risk to life will depend upon the situation of the sinus relative to neighbouring structures of vital importance. In the case of the antrum, aside from the evil influence upon the general health induced by constantly swallowing septic matter, there can, practically speaking, be no danger to life. With empyemata of the frontal, ethmoidal, and sphenoidal sinuses the case is very different, and many cases terminating in fatal meningitis have been recorded. So long as the drainage from the sinuses remains free, the patient will only suffer from the results of the absorption of septic matter into the general system, and the annoyances caused by the nasal discharge, but at any time a severe cold in the head, or the increase in size of polypi or other inflammatory swellings, may produce a retention of septic products within the sinus, and evil possibilities may at once present themselves.

2. The risk to life when operative treatment is undertaken will in the main depend on two factors: (*a*) The sinus involved; and (*b*) The surgeon's familiarity not only with the region in which he is working, but also with the many technical details of intranasal manipulation

# Plate XXV.

## SKULL PREPARED TO SHOW MAXILLARY ANTRUM AND ETHMOIDAL CELLS.



The left malar bone has been sawn off, displaying the left axillary antrum. The large orifice communicating with the nasal fossa is seen, and the partial sub-division of the cavity below by septa should be noted. The ethmoidal cells have been exposed by removing their outer walls, and the extreme thinness of the bony partition dividing these cells from the orbital cavity will be observed. The frontal sinus of the right side has also been laid open.

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and operation. The maxillary antrum may be operated upon and subjected to very considerable traumatism, without any appreciable risk, because it is far removed from any vital structures. Quite the reverse holds in the case of the higher sinuses, and many fatal results have occurred as a direct result of operative interference. These "regrettable occurrences" have generally followed radical procedures upon the fronto-ethmoidal sinuses, and in nearly all the cases which I have been able to investigate (including two of my own) the cause of failure may be summed up in two words, *viz.*, deficient drainage.

Antral Sinusitis.—*Some minor Symptoms.*—The existence of chronic suppurative disease of the antrum of Highmore may escape detection because the amount of purulent secretion is too slight to arrest the attention of the patient, and may even be insufficient to escape constantly into the nose. The patient, in a fair percentage of cases, complains only of a recurring bad smell or of a bad taste. In others, occipital headache is the main symptom. Such cases are usually due to diseased roots of teeth corresponding to the floor of the antrum, and it is probable that septic infection gains access to the antral mucosa through the lymphatic channels in the alveolar bone. As a rule the simple operation of opening the antrum through the canine fossa, or through the alveolus, followed by irrigation for a few weeks, will result in a cure.

*Acute Sinusitis.*—Undoubtedly a great many cases of acute antral sinusitis undergo spontaneous recovery, and even cases of acute antral empyema may recover spontaneously. Hickey[2] gives examples of the latter condition, and records cases where he dissuaded patients who had been advised to have their suppurating antrum opened and drained, from undergoing any operation, the result being spontaneous cure. He pleads for what he calls the conservative treatment of the antrum. Are we then justified in advising that cases of acute antral suppuration should delay operation in the hope of spontaneous recovery? We think not; for whereas when suppuration has occurred in the antrum we can feel fairly certain of a complete and permanent cure if the cavity is opened and irrigated, if operative treatment is delayed until the condition passes into the subacute or chronic condition, success from minor procedures becomes less certain; while in chronic antral empyema even a radical operation cannot be guaranteed to effect a cure. The proper course, in our opinion, is to tell the patient that spontaneous recovery *may* occur, but that it is better to make recovery certain, rather than run the risk of incurring greater and more serious trouble.

*Operation through the inferior Meatus.*—Many instruments and methods of entering the antral cavity through the inferior meatus are advocated. Curtis[3] has recently claimed advantages from the employment of his trephines and burrs, and these have the great advantage of making as large an opening as may be desired, while leaving the

edges of the fenestration smooth. He first removes the anterior third of the inferior turbinate, by making a couple of perforations with the trephine, and finishing with the cutting forceps and snare; in this manner he clears away the body to its line of insertion. The outer wall of the meatus is now brought into view. He perforates the wall at a point a quarter of an inch above the nasal floor, for the bone is thinner as one ascends the wall, and in doing so he enters the trephine about a centimetre behind the anterior attachment of the turbinate at an angle of about 45°. Having punctured the antrum, he changes the trephine for an olivary or barrel burr drill, and enlarges the orifice upward, downward, and backward. The bleeding is stopped by stuffing in gauze wet with adrenalin solution. By using properly curved flexible ring curettes, he finds he is enabled to reach the walls of the antrum very satisfactorily. All this is done under local anæsthesia. The edges of the fenestration must be very free from bony spicules, to facilitate dressing. The advantage of the method is that if a favourable result does not ensue, a fenestration is established in the nostril, which will not be out of place if, later, it is decided to curette through an opening in the anterior wall.

*New Plugs for openings through the Alveolus or Canine Fossa.*—Much trouble is sometimes occasioned by the tendency for plugs of vulcanite to cause pain or to slip out; especially is this the case with openings in the canine fossa. The writer has devised **Rubber Plugs** with a retention swell, which are easily inserted or removed, cause no pain, and never escape spontaneously from the opening in the canine fossa. They are inserted by means of an introducer, which stretches the plug till the retention swell disappears. As soon as the swell has passed into the cavity, the introducer is removed, and the plug pushed home. Simple traction suffices to remove the plugs. They are made by Down Bros., of London, in various sizes as regards both thickness and length, so as to fit all cases.

Ethmoidal Sinus Suppuration.—The frequency of ethmoidal cell suppuration in association with, and as a primary cause of antral empyema, renders the anatomical observations of Mosher[4] of considerable interest, as they appear to warrant the operative treatment of the middle and posterior ethmoidal cells through the antrum. He states that not only can these cells be opened up from the antrum, but the sphenoidal sinus also. On the cadaver one can see how directly and effectively this inaccessible region may be dealt with. In 1897, at the International Congress of Medicine at Moscow, Jansen reported a case of suppuration of the sphenoidal sinus which he had treated through the antrum. He found the ethmoid cells also diseased, and treated them likewise from the antrum. He was pleased with the method and advocated it. Mosher calls attention to this route again, to consider briefly the applied anatomy of the operation. If the antrum is opened from the canine fossa and the upper part of its inner

wall along the line of the junction of the inner wall, and the roof of the antrum is examined, the following structures are found: The first quarter of an inch of the wall makes the outer boundary of the lacrymal canal. Just internal to this, or if there is no swelling present, one-fourth to three-eighths of an inch from the surface, the ostium is placed. In 10 per cent of the cases the antrum has a second ostium, which has no definite position A knife, therefore, entered at the ostium, inclined towards the horizontal as much as the opening in the canine fossa permits, and carried directly backwards, would cut only the membranous part of the wall, except of course the almost paper-like uncinate process of the ethmoid, and would bring up against the maxillary process of the palate bone. In many cases this is extremely thin, so that the knife would penetrate this and be stopped by the ascending process of the palate, where it lies against the posterior inner angle of the superior maxilla, like one finger against another, and strengthens it. The lacrymal canal is entirely out of relation to the incision. The incision is made about one-half of an inch long. No vessels of any size are cut. The inner wall of the antrum hangs like a curtain from the lower part of the inner angle of the orbit. The knife shaves it off much as the mesentery is cut from the small bowel. For practical purposes the inner wall of the antrum can be regarded as made up much the same as it is in the disarticulated bone—that is, the first quarter of an inch is the outer boundary of the lacrymal canal; then comes the ostium, next one-half inch of membrane, and finally, for three-eighths of an inch, bone again.

A curette entered through the ostium, inclined toward the septum, and carried back in this incision, would strike, first the ethmoid bulla with the rest of the middle ethmoid cells, then the posterior cells, and finally the anterior wall of the sphenoid. The ethmoid parallelogram is opened from its lower outer angle, and the cells can be removed by working upward and inward, toward the septum and away from the orbit. The height of the working space is the height of the os planum of the ethmoid, minus the notch made in the upper wall of the ethmoid parallelogram by the dipping downward of the olfactory groove. This leaves the working space about one-half inch.

Tilley[5] considers that the treatment of ethmoidal and sphenoidal suppurations will demand from the surgeon a practical familiarity with intranasal operations and technique, and without having acquired these he and his patient will probably be disappointed with the result of surgical intervention. Generally speaking, operative manipulations in the ethmoidal region will be safe when they are carried out below the level of insertion of the middle turbinal bone, and much excellent information may be gained as to the progress one is making by the frequent examination of the diseased area with the tip of the little finger passed upwards through the nostril. In this way the limit between soft chronically inflamed (rarefying osteitis) and firm healthy

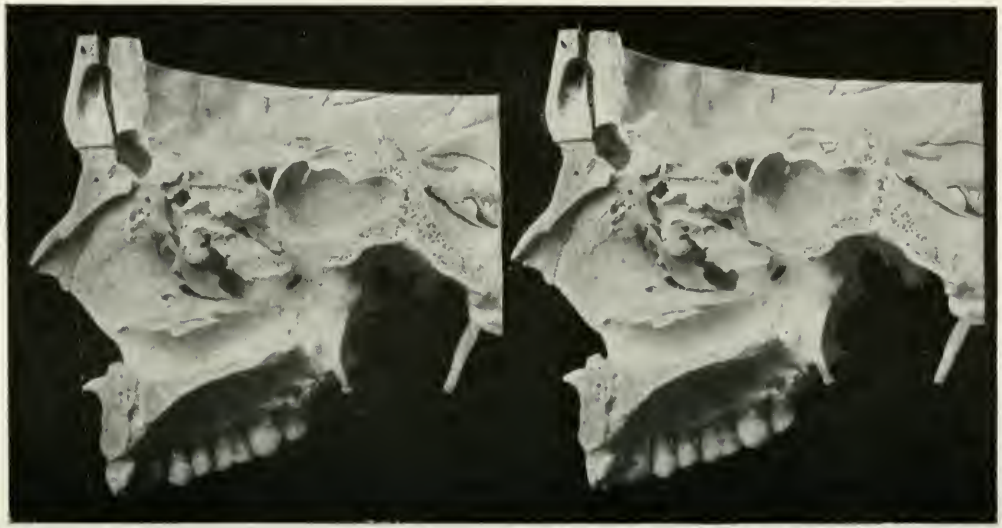
bone can often be ascertained. In most operations upon the ethmoidal (and frontal) sinuses it will be a great advantage to remove at least the anterior half of the middle turbinal bone as a preliminary procedure, not only because it is often itself chronically inflamed, but the absence of this structure will enable the surgeon to deal more easily with the lateral mass of cells, and free drainage will be secured during the after-treatment. A dangerous area is reached when instruments are used above the level already mentioned, for here we are in close proximity to the cribriform plate.

Frontal Sinus and Frontal-Ethmoidal Sinus Suppuration.—Tilley[6] is in entire accord with those who maintain that only complete obliteration or destruction of the bony cavities offers any prospect of a permanent radical cure. In the case of the frontal sinus the anterior bony wall should be entirely removed, and any recesses of the sinus thrown into the main cavity by the breaking down of partition walls. Especially will this be necessary in those instances where certain suppurating ethmoidal cells extend outwards immediately below the floor of the frontal sinus, and are only separated from it by a thin, almost transparent septum of bone. Furthermore, the fronto-nasal canal must be enlarged, and suppurating anterior ethmoid cells in its immediate neighbourhood must be carefully broken down, or reinfection of the higher sinus will occur. Having proceeded thus far, the latter cavity should be lightly packed with sterilized gauze, which can be changed on alternate days until the obliteration of the sinus by granulation tissue is complete. From the moment the operation is completed the motto of the surgeon must be, "Free, unhindered, spontaneous drainage," and if he secures this he need never fear that any serious harm will come to his patient.

As an example of his technique the following case of operation on the left frontal sinus may be summarized. The patient having been anæsthetized, the left posterior naris was plugged with a sterilized sponge in order to prevent the flow of blood into the lower air passages during the operation upon the nasal sinuses. By means of suitable nasal scissors and a cold wire snare the anterior halves of the middle and inferior turbinal bones were removed, and the frontal sinus was opened through an incision in the inner half of the left eyebrow, the lower internal limit of the wound being situated a quarter of an inch above the internal palpebral ligament (*Fig.* 33). Having turned back the soft parts and periosteum, a small area of the anterior sinus wall was removed with chisel and mallet. Pus was discharged through the aperture, and through it bulged the diseased and swollen mucous membrane. The anterior sinus wall was now completely removed by suitable bone forceps (Jansen's), the diseased mucosa were carefully but completely curetted away (*Fig.* 34), the fronto-nasal canal was enlarged by means of "burrs," and the anterior ethmoidal cells were also broken down by means of the latter instruments, as well as by

# PLATE XXVI.

## MESIAL SECTION OF SKULL.



This section displays the right nasal accessory sinuses. The right sphenoidal and both frontal sinuses can be seen, also ethmoidal cells and various structures in the outer wall of the nasal fossa. (See also *Plate XXVII.*)

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sharp ring curettes passed up from the nostril. The bony wound was lightly packed with gauze, and a rubber drainage-tube was passed into the naso-frontal canal to preserve its patency until the sinus cavity had later filled with granulation tissue, when the tube was removed (fourth week). The after-treatment consisted in lightly packing with gauze on alternate days until the cavity was obliterated by granulation tissue, when the fistulous tract maintained by the rubber tube leading into the nose was also allowed to close.

*Fig.* 33.—Curved line of incision.

Treated in this way, a frontal sinus of average size takes from four to five weeks to heal completely, but the patient can usually leave his bed on the third or fourth day after the operation. The case is of interest in that it illustrates the very small amount of scarring even when the sinus is totally obliterated. It may here be mentioned that the amount of disfigurement caused by the contraction of the scar of an obliterated sinus depends on the depth (from before backwards) rather than on the superficial extent of the sinus.

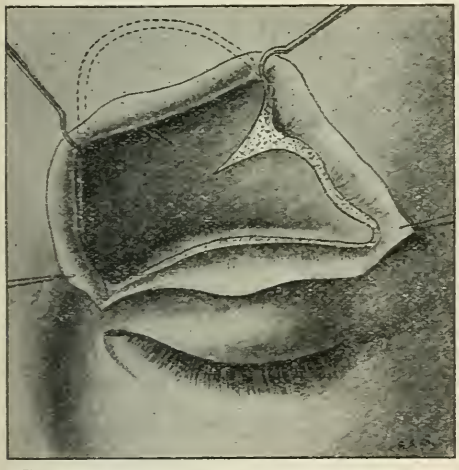


*Fig.* 34.—To show cavity of sinus after complete removal of the anterior wall and of diseased mucous membrane. The dotted line indicates upward extension of the sinus, the anterior wall of which can be easily removed through the usual incision. Illustrates also the incomplete (always) division of the sinus cavity by a bony septum.

Luc[7] recommends and now uses the Killian operation, a combination of the Ogston-Luc with the Kuhnt and Jansen operations, getting the immediate closure of the wound and nasal drainage of the Ogston-Luc ; the opening in floor of sinus of Jansen's ; and the removal of a part of the anterior wall of Kuhnt's method ; but preserving a bony bridge between the two openings,

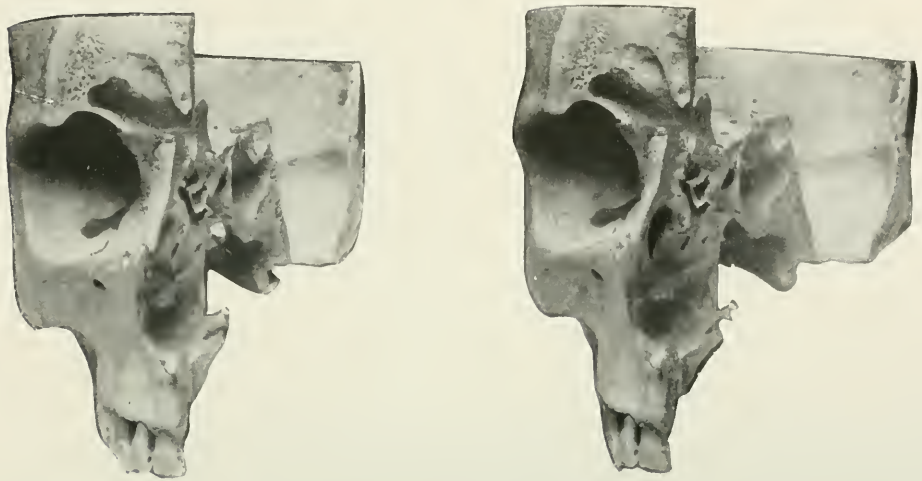
which reduces the deformity, and extending the inferior bony opening to the ascending part of the maxillary bone, giving opportunity to enlarge the fronto-nasal opening, and also giving access to the ethmoid cells. Dr. Luc recommends this for cases of large sinus, and the Ogston-Luc for cases of small sinus. The object of the operation is to obliterate the cavity of the sinus, and often it is a choice between complete success in that point, and a considerable degree of deformity as, *e.g.*, in the Killian or Kuhnt operation, and if necessary we must choose the latter. The uprising of the fatty tissue of the orbit through the wound in the floor of the sinus helps to obliterate the cavity and reduce the deformity. The drainage opening into the nose must be large enough to allow the finger to go *up* through the nose into the cavity of the sinus.

Sphenoidal Sinuses.—Mosher[8] has given a description of the clinical anatomy of these sinuses; partly a condensation of Sieur and Jacob's work, to which he has made valuable additions. The upper surface is formed by a thin lamella of bone, its important relations being the dura mater and the optic nerves and ophthalmic arteries. The *external wall* is also thin, and lies in relation with the cavernous sinus (in which lies the internal carotid artery), the sphenoidal fissure, and the optic canal. In one specimen the author found the internal carotid and ophthalmic arteries projecting into the sinus. Disease of the wall may give rise to progressive ocular troubles, violent pain, epileptiform attacks, crises of vomiting, meningitis, and finally brain abscess. The *posterior wall* is usually thick, but if the sinus is large it may come into close relationship with the basilar artery, the occipital sinus, the medulla and pons. Such a sinus, if diseased, would give rise to the following symptoms—occipital headache, vertigo, vomiting, epileptiform attacks, involvement of the motor nerves of the eye, and alteration of the fundus. The *inferior surface* is in relation with the nasopharynx. Both bone and mucous membrane are here usually thick, so that they cannot be readily punctured. The Vidian nerve and arteries run in a canal in the bone. This is the motor nerve of the spheno-palatine ganglion, supplying the levator palatæ and azygos uvulæ muscles. The *anterior wall* is thin, and forms the posterior wall of the posterior ethmoid cells, and the upper part of the nose. It articulates with the vomer. It is through this wall that the sinus can be reached for treatment. The author's method of probing the ostium of the sinus is as follows: A fine probe, having a curve similar to that of a Eustachian catheter with the convexity upwards, is passed along the under surface of the cribiform plate at the root of the nose. When the point of the probe reaches the back of the nose, a little manipulation will cause it to enter the opening of the sinus. The advantage of the method is that irregularities of the septum or turbinate do not interfere with the passage of the probe along the cribriform plate.

*Prolongations from the Sinuses:* (1) Into the lesser wings of the

# PLATE XXVII.

## MESIAL SECTION OF SKULL



This is the same preparation as *Plate XXVI*, but viewed from in front, so as to show the relations of the various sinuses and structures in the nose to the orbital cavity, etc., and very much as they would appear in anterior rhinoscopy. The right frontal sinus is laid open by removing the anterior wall, showing the incomplete bony septa which partially subdivide the sinus longitudinally.

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sphenoid. This brings the sinus into close relation with the optic groove and its contained optic nerve. (2) Into the great wings of the sphenoid and base of the pterygoid plate. The sinus is then in relation with the foramen rotundum and foramen ovale. The sinus may be opened in enlarging the foramen ovale in the external operation on the Gasserian ganglion. (3) A prolongation forward at the antero-inferior angle, which brings the sinus in immediate relation with the maxillary antrum. This is found in one case in four.

The sphenoidal sinus is best reached through the nasal cavity, and it will nearly always be necessary first to remove the middle turbinal bone. In dealing with this deep-seated sinus the surgeon must make use of a bright reflected light, and thoroughly define the anterior sinus wall and its ostium before he commences removal of the same. Operations upon this sinus and the posterior ethmoidal cells are best carried out under the influence of cocaine (20 per cent) anæsthesia, and the most suitable instruments for breaking down the thin bony structures in these regions are Hajek's series of hooks. The inside of the sphenoidal sinus should never be curetted, for if a large opening be made in the anterior wall, suppuration will generally cease if the cavity be frequently cleansed with mild antiseptic lotions. Curettage of the inside of the sinus, and especially of its upper and outer walls, may prove to be a very dangerous procedure Those who have had much experience in operating upon the sinus will agree that it is much easier of approach than would at first thought seem probable. The opening in its anterior wall should always be made as large as possible, for it exhibits a very marked tendency to contract.

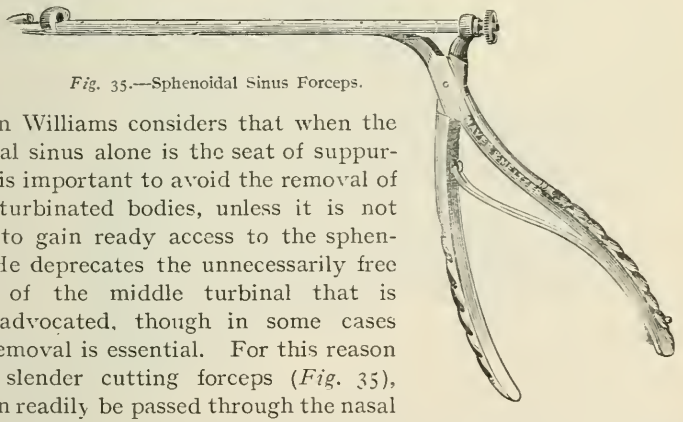

*Fig.* 35.—Sphenoidal Sinus Forceps.

Watson Williams considers that when the sphenoidal sinus alone is the seat of suppuration, it is important to avoid the removal of healthy turbinated bodies, unless it is not possible to gain ready access to the sphenoidal. He deprecates the unnecessarily free removal of the middle turbinal that is usually advocated, though in some cases partial removal is essential. For this reason he uses slender cutting forceps (*Fig.* 35), which can readily be passed through the nasal passages from the front until it impinges on the posterior wall of the naso-pharynx just below the sphenoidal body, then drawing the instrument forward, while the tip is made to press upwards along the roof of the naso-pharynx, until it is felt to have reached the anterior margin, when the tip passes up. The blunt pointed tip is then made to pass

through the thin sphenoidal turbinated bone as horizontally as possible about one quarter of an inch or so from the lower margin. The fact that the instrument is pointed, although it has a blunt point, ensures that only slight pressure will make it perforate the thin wall, and any force is to be avoided. The instrument is arrested when it has entered half an inch, and on closing it a small piece of the bony wall is thereby punched out. This punching process can be repeated without risk till a free opening of the anterior wall results, sufficient to ensure permanent drainage by the lower part of the wall, instead of through the upper part, which is the seat of the natural ostium and any enlargement that may be made of this natural ostium.

The anatomy of these sinuses is illustrated in the Stereograms, *Plates XXV, XXVI, XXVII,* and *XXVIII.*

REFERENCES.—[1]*Lancet,* May 21, 1904; [2]*Ther. Gaz.* July 15, 1903; [3]*Laryng.* Oct. 1903; [4]*Amer. Jour. of Med.* Nov. 1902; [5]*Lancet,* May 21, 1904; [6]*Ibid;* [7]*Med. Rec.* July, 1903; [8]*Laryng.* March, 1903.

**NASAL POLYPUS.** (*See* POLYPUS, NASAL.)

**NECK (Congenital Fistula of).** *Priestley Leech, M.D., F.R.C.S.*

König[1] has devised the following operation for closure of these clefts. By dissection mobilize the fistula to a point above the digastric; above this free it by blunt dissection with the finger to a point close to the oral mucous membrane. Open the mouth with a Whitehead speculum, pass a strong curved probe through the wound into the mouth at a point anterior and inferior but close to the tonsil. In doing this it will be necessary to incise the oral mucosa. Tie a silk thread to the outer end of the fistula, and with the probe pull the thread into the mouth; traction on the thread will pull the mobilized fistula into the mouth; suture the side of the fistula to the edges of the wound in the oral mucosa, and cut away the protruding portion of the fistula. Close the external wound. All communication between the fistula and the exterior is cut off, and all that is left of the fistula is a harmless passage, opening both behind and in front of the tonsil. The operation avoids the difficulty of excising the pharyngeal end of the fistula, and the results are excellent.

König has applied the same principle in excising certain blind internal rectal fistulæ, and has found it beneficial.

REFERENCE.—[1]*Arch. f. klin. Chir.* Bd. lxx. p. 1008.

**NECK (Tumours of).** *Priestley Leech, M.D., F.R.C.S.*

Reclus and Chevassu[1] report a case of tumour developed in the retro-carotid corpuscle, which was removed without any injury to the common carotid artery and its two main branches, with which the growth was closely connected. Reclus points out that tumours of the retro-carotid corpuscle are not epitheliomata, but endotheliomata and homologous growths. The characteristic clinical signs are: a soft and compressible swelling the size of a small hen's egg, moving freely

# PLATE XXVIII.

## OUTER WALL OF THE LEFT NASAL PASSAGE.

This is a median section of the nose immediately to the right of the nasal septum, which is removed to expose the outer wall of the left nasal passage, and lay open the right frontal sinus. It is viewed from the front, so as to show the relations of the various structures in the nose to the eye and other parts of the face. Bristles are placed in the apertures of the sphenoidal sinus and of one of the posterior ethmoidal cells. The *ostium maxillare* in this specimen is abnormally low, appearing below the border of the middle turbinate border, and not (as usual) in the hiatus semilunaris.

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with the pulsations of the carotid arteries, but without expansile impulse or *bruit*; a constant situation above the superior margin of the thyroid cartilage and below the parotid gland; and a somewhat peculiar evolution, growing steadily but very slowly at first, and after a time being subject to repeated stages of rapid development. It occurs in middle-aged subjects; a majority being females. Removal of these tumours is a difficult and dangerous operation; in two cases out of ten, death was directly due to the operation, and in only two cases was it possible to remove the tumour without dividing the common carotid and its two main divisions.

Reference.—[1]*Bull. Mém. de la Soc. de Chir. de Paris*, No. 18, 1903; see *Brit. Med. Jour.* Sept. 12, 1903.

**NEMATODES (In man).** *J. W. W. Stephens, M.D.*

Catto[1] describes a peculiar condition found by him at the *post-mortem* examination of a Chinaman dead from cholera. The mesentery was thickened and the glands enlarged in size, some as big as a golf-ball. The large intestine and posterior wall of the bladder were much thickened. Microscopically, the submucosa showed in parts ova in immense numbers, and in others the mucosa contained free embryos. Other specimens showed a minute adult trematode in a vessel of the meso-rectum. [The ova have since[2] been shown to belong to the trematode, a new Schistostome, viz., *S. cattoi*.]

Reference.—[1]*Brit. Med. Jour.* Sept. 17, 1904; [2]*Ibid*, Jan. 7, 1905.

**NERVES, Peripheral (Surgery of).** *Wm. Thorburn, F.R.C.S.*

*Neuralgia.*—Frazier[1] contributes a paper on the surgical treatment of trigeminal neuralgia. He advocates that a **Peripheral Operation** or operations should always be first tried when the pain is restricted to either the distribution of the inferior dental or the infra-orbital branch. When the peripheral operation has failed, or when from the onset the pain is referred to two or more branches, he advises that recourse should be had at once to an intracranial operation—either **Division of the Sensory Root**, or, in certain cases, division of the **Second and Third Divisions**, with interposition of a foreign substance to prevent reunion. In thus supporting Abbe's operation for the division of the second and third divisions and the interposition of rubber tissue, Frazier remarks that it is less difficult and less radical than that of division of the sensory root, but that its field of usefulness is restricted to those cases in which only the second and third divisions are involved. Abbe's operation also makes no provision for the ganglion itself being diseased.

One advantage which he claims for the operation of resection of a small piece of the sensory root is that, although really more radical than removal of the ganglion, it does not entail the disturbance to the under surface of the ganglion, from which the latter obtains its blood supply, and which is so often the cause of very troublesome

hæmorrhage. The operation was first suggested by Spiller, and in conjunction with Frazier was repeated upon dogs. The specimens removed after varying intervals subsequent to the operation, failed to show the least sign of nerve regeneration. Frazier has published three successful cases, the first of which was operated on twelve months before. In performing the operation he chooses the Hartley-Krause or temporal route. The preliminary stages are the same as those for removal of the ganglion, and, after locating the three landmarks (the foramina spinosum, ovale, et rotundum), Frazier completes the operation as follows: When the margins of the foramen rotundum and foramen ovale are fully exposed, the operator then proceeds to the next step necessary for the exposure of the ganglion, and reflects a flap of the dura propria. This is best accomplished by making an incision through the dura propria between these two foramina, and separating the dura only from the upper surface of the ganglion. It is not necessary to disturb the lower surface of the ganglion in the operation we are describing. The dura is to be separated then only from the upper and posterior surfaces, until the sensory root is exposed. Pick up the sensory root on a short, blunt hook, and remove a small section of the nerve with blunt, curved scissors. With this the operation is practically finished.

Gordon[2], after experiencing great difficulty in the removal of the whole ganglion, has also come to the conclusion that the main object of the surgeon should be the complete isolation of the sensory root, and suggests that the space of Meckel should be opened behind the foramen ovale and the third division of the fifth nerve, instead of in front of it.

J. Hutchinson, junr.,[3] reports a case of intracranial resection of the second division of the fifth nerve immediately before its exit from the foramen rotundum, for epileptiform neuralgia. The operation was performed twelve months before publication, with complete relief up to the present time. He performed the operation with the patient seated in a dentist's chair, in order to lessen the trouble from venous hæmorrhage.

Cushing[4] condemns both resection of the sensory root and also Abbe's operation for the removal of the second and third divisions of the nerve with interposition of rubber tissue. He reports successful cases of **Removal of the Ganglion,** stating that his success depends on the route adopted to reach the ganglion. It was calculated by Tiffing that there was a mortality of 22 per cent by Rose's method. The high operation had a mortality of 10 per cent. Cushing follows the direct sphenoidal zygomatic route, and removes the zygoma altogether. He has operated on 25 cases with 1 death, and 50 more have been reported, with a total death-rate of 5 per cent.

*Anastomosis of Facial Nerves.*—At the same time as the Ballances and Purves Stewart published their cases of facial palsy treated by

**Anastomosis** of the spinal accessory nerve with the distal portion of the facial, and following the valuable experimental and operative work of Kennedy, of Glasgow, Cushing[5] reported a successful case treated in this way. He gives a very complete description of the after-progress of the case, with some very good photographs, illustrating the amount of voluntary movement possible. This is somewhat disappointing in all the cases so far reported, inasmuch as vigorous facial movements are associated with lifting of the shoulder or rotation of the head, and only feeble action is confined to the facial muscles alone. Kennedy[6] obtained almost perfect use of the eyelids in his case, and also reports that improvement is still progressive even four years after the operation. (*See also* FACIAL PARALYSIS).

*Raynaud's Disease.*—Cushing[7] reports a case of this disease treated by the application of a **Tourniquet** to counteract the vaso-motor spasm. Barlow, in his chapter in *Allbutt's System of Medicine*, says: "The earliest explanation of this pathological habit appears to be Raynaud's hypothesis, namely, the vasomotor centre or centres are unduly irritable; that the commonest irritant is from the periphery, for example, cold; and that the different impulses from the centre lead to the paroxysmal contraction of the arterioles." Cushing, in discussing his treatment, states: "The active hyperæmia, with the increased surface temperature, following the removal of a tourniquet or Esmarch bandage which has been applied to an extremity for operative purposes, is presumably due to the temporary paralysis of vasomotor control to the part below the encircling bandage. Whether the pressure of the tourniquet produces a local compression paralysis, or whether the resultant anæmia throws the terminals of the vaso-motor apparatus out of gear, it is impossible to say; but it suffices to say that the non-medullated fibres are 'blocked' in consequence of the constriction by a more moderate or shorter application than is necessary to throw out of function those fibres conveying sensation and motion." In the case which he reports, the arterial spasm extended far enough up the extremity to render the radial artery at times impalpable at the wrist. The tourniquet was applied to the upper arm for one or two minutes daily, to one or other member according as the symptoms indicated. "The relief to the burning pain in the fingers was so pronounced, that after the first few trials the patient was not only very willing to submit to the temporary discomfort of constriction, but would call for it." The treatment was continued for about a month, when the symptoms entirely ceased, and, except for a slight recurrence, she has had no further return of the trouble. The treatment, of course, has its limitations, and is not applicable to a case where vascular spasm affects regions other than the limbs.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* Dec. 1903; [2]*Med. Press*, Mar. 30, 1904; [3]*Lancet*, April 16, 1904; [4]*Brit. Med. Jour.* Mar. 19, 1904; [5]*Ann. Surg.* May, 1903; [6]*Brit. Med. Jour.* June, 1903; [7]*Jour. Nerv. and Ment. Dis.* Nov. 1902.

## NERVOUS DISEASES.

*Prof. Græme M. Hammond, A.M., M.D., New York.*

Hammond[1] was led to consider the use of massive doses of **Strychnia** in degenerative diseases, by the beneficial effect produced in the treatment of certain cases of tic douloureux by comparatively large doses of that drug. In more than one case of this disease, it has been clearly demonstrated that the symptoms depend upon a more or less profound degeneration of the cell bodies with their axones in the trigeminal nucleus, the ganglia, and the nerve. In some cases the primary lesion seemed to be in the vascular system supplying the trigeminal mechanism, and the degeneration of the nervous elements seemed to be the direct result of the consequent deprivation of nutrition.

It seems probable, in the light of our present knowledge, that all degenerations result from one or more of the following causes: (1) Some toxin which, acting in a chemical manner, destroys the substance of the neuron, or by acting upon its metabolic mechanism, prevents the assimilation of nutrition upon which its life depends; (2) Some disease of the blood-vessels causing their partial or complete obliteration, or some other obstruction to the blood current which so deprives the neuron of its nourishment that its vitality must necessarily fail; and (3) Some traumatism causing hæmorrhages, lacerations, or compressions.

It occurred to him that possibly strychnia in doses far in excess of those generally administered, and continued for a long time, might favourably influence the degenerative process of tabes, and so improve the nutrition of the neurons that degeneration might either be arrested, or at least delayed. His paper was based on the results obtained in the treatment of eleven cases. There were four cases of locomotor ataxia, three cases of optic nerve atrophy, three cases of progressive muscular atrophy, and one case of pseudo-muscular hypertrophy. In the first case (locomotor ataxia) the strychnia was given hypodermically once a day. In all the others it was given by the mouth three times a day. The author believes the latter method to be fully as efficacious as the former, and much more convenient.

The initial dose was from $\frac{1}{50}$ to $\frac{1}{40}$ gr. This was gradually increased by $\frac{1}{500}$ gr. daily, until doses of about $\frac{3}{4}$ gr. three times daily were reached. In the first case in which the remedy was given hypodermically, a daily dose of $\frac{4}{5}$ gr. was finally given. Little effect in arresting the progress of the degeneration was observed until the dose reached $\frac{1}{3}$ gr. three times a day. All of the cases were under observation from one to three years. In all of them, except one of progressive muscular atrophy, the degenerative processes ceased to advance, and at the time of presenting the paper there had been no relapses.

In the cases of tabes the author had never seen any improvement in the pupillary symptoms, the knee-jerks have never been restored, and Romberg's symptom, though diminished, never disappeared completely. The improvement consisted simply in complete or almost complete

relief from pains, improvement in locomotion, and the fact that the degenerative process ceased to advance.

It may be argued from this, that a certain degree of the symptoms depends upon partial degeneration of the cell bodies, and that if this degeneration has not passed beyond a certain point, the partial or complete restoration of the cell amounts to more than a possibility. It certainly seems possible, in some instances at least, to arrest degenerative processes in diseases which have hitherto been regarded as hopeless. If this is so, the importance of early treatment cannot be too strongly insisted upon.

REFERENCE.—[1]*Boston Med. and Surg. Jour.* Aug. 27, 1903.

**NEURALGIA.** *Purves Stewart, M.A., M.D.*

The term neuralgia should be restricted to those cases of paroxysmal pain confined to the area of a particular sensory nerve, in which organic disease can be excluded. Pains due to neuritis, tabes, aneurism, gross spinal or cerebral lesions, and other organic causes, must not be classed as neuralgia. In typical cases, besides the pain, we observe "tender points" either at the foramina of exit of the nerves through bony foramina, or where the nerves cross rigid structures such as bones or fasciæ, or over the vertebral spine corresponding to the origin of the affected nerve.

TREATMENT.—All sources of peripheral irritation must be first sought for and removed. The general nutrition must be improved by diet, tonics, and, if necessary, by a **Weir-Mitchell Course** of isolation and massage. If a gouty or rheumatic diathesis be underlying, or if anæmia be present, these must be appropriately treated. Multiple neuralgias are those most likely to respond to such general measures. In addition, various drugs may be exhibited for the relief of the symptoms. **Morphia** is a last resource, and must only be given in severe cases, where all other means have failed. Amongst the newer analgesic drugs which have been found useful, may be mentioned **Phenalgin** (gr. 10 to 20) and **Pyramidon** or dimethyl-amido-antipyrine (gr. 25 to 30). **Radium** has been found by Darier[1] to have powerful analgesic effects when applied locally for two or three hours a day, preparations of low radio-activity being sufficient to produce these results. Paroxysms of pain are sometimes relieved by **Galvanism** locally, or by **Dry-cupping** over the corresponding posterior nerve-root ganglion.

Now and then, however, cases occur which have resisted all medicinal agents, and, as a last resort, **Surgical Interference** may be necessary. One should never recommend this, however, except in cases strictly localized to one nerve, *e.g.*, the trigeminal. Bilateral neuralgias are not favourable for surgical measures. In suitable cases, the most lasting results are obtained by excision of the corresponding sensory ganglion, either the posterior nerve-root ganglion, or the Gasserian

ganglion, as the case may be. Short of this latter operation, which is a formidable one, encouraging results have been obtained in a number of cases by the intra-neural **Injection of Osmic Acid** (5 to 10 minims of a 1½ per cent aqueous solution) the nerve being exposed under local anæsthesia. This plan, originally suggested many years ago by Billroth and Neuber, has recently been revived in England by Sir W. Bennett[2], G. A. Wright[3], and Turner[4], who have recorded a number of cases where the pain was relieved and sometimes cured. In some of Wright's cases, however, **Nerve Stretching** was employed in addition. The osmic acid produces degeneration in the affected nerve, with anæsthesia in its sensory distribution.

References.—[1]*Lancet*, March 5, 1904; [2]*Ibid*, vol. ii. p. 1220, 1899; [3]*Med. Chron.* Feb. 1904; [4]*Med. Soc. Trans.* p. 357, 1898.

**NEURASTHENIA (Traumatic).** *Purves Stewart, M.A., M.D.*

It is no uncommon occurrence for patients suffering from symptoms of nervous disease, to attribute these symptoms to some antecedent physical injury. And from a medico-legal point of view, the question of the relation of trauma to nervous disease is one of considerable importance. Every physician, and many a juryman, knows of "traumatic neurasthenia," and of the remarkable recoveries which sometimes supervene, once the patients have obtained substantial financial compensation; the improvement, moreover, coinciding with the conclusion of legal proceedings. Equally significant, however, though less striking, are other cases where no such improvement results, and in which the sufferer remains permanently more or less of an invalid, even when there is no question of further litigation, or where, perhaps, substantial damages have already been paid. These latter cases are probably more than mere neurasthenia. The difficulties of prognosis are considerable, and arise, in part, from a failure to distinguish between traumatic neurasthenia, and actual brain contusion with minute lacerations, punctiform hæmorrhages, and consequent cerebral sclerosis, slight but permanent. In the diagnosis between these two conditions, the following points, as Judson Bury[1] points out, are of value:—

The neurasthenic patient frequently has an uncontrollable tendency to discuss his symptoms in detail; his mental condition is active and introspective, and he is often a sufferer from insomnia. On the other hand the patient with contusion of the brain is dull and apathetic, his mental processes are laboured and cloudy, and he tends to be drowsy and stuporose.

The neurasthenic complains of pains in the back, which often radiate to the head and other parts of the body. In addition to pain, there is pronounced hyperæsthesia: the spine and adjacent parts become exceedingly sensitive, not only to deep pressure but also to a light touch, and the hyperæsthesia may extend to the special senses. Dyspepsia, palpitation, and other visceral disorders are also common. These symptoms are absent or inconspicuous in cases of bruised brain.

The neurasthenic is able to commence work, either physical or mental, and to do it accurately for a short time, but he soon tires; he lacks concentration, finds his memory unreliable, and exhibits indecision in all his actions. He is restless, while anxiety about his condition fills his thoughts. The patient who has a bruised brain is quite unfit to follow any employment; he is too apathetic as a rule to exhibit anxiety or to worry, and when his cortical lesion is severe and extensive, apathy is often associated with profound loss of memory and other signs of considerable mental deterioration.

In both groups a marked intolerance to alcoholic drinks is frequently observed. The distinctions above mentioned, although practical ones, are not always prominent, and tend to fade as time goes on. Nor need we be surprised if unable to make a diagnosis between molecular changes in the cortex, and bruising of its tissue, for both morbid processes may disorder the same nerve elements, when the symptoms of the changes will be similar or identical. But in whatever way we look at the matter, one thing stands out clearly, namely, the permanent physical and mental incapacity that so often follows concussion of the brain, even when the injury appeared slight.

REFERENCE.—[1]*Brit. Med. Jour.* April 30, 1904.

**ŒSOPHAGUS (Stricture of the).** *Priestley Leech, M.D., F.R.C.S.*

H. Jungnickel[1] reports a case of two strictures of the œsophagus, one 18 cms. and another 30 cms. from the mouth; the first was supposed to be due to sounding of the œsophagus, and the second (which was much the worse) to diphtheria, from which the patient had suffered while in hospital with that disease, when he had inability to swallow solids not long after the attack had passed away.

Thompson[2] records three cases of stricture of the œsophagus due to typhoid ulceration. As to the exact nature of œsophageal ulcers met with during typhoid, nothing definite can be said. Louis looked upon them as due to the extreme malnutrition of the tissues; ulcers at the lower end of the œsophagus are due to peptic digestion of the œsophageal mucosa. In many exhausting diseases, where the patient has lain for a long time before death in an extremely weak state, ulcerative lesions of the œsophagus have been observed. This theory will not account for ulceration of the upper portion of the gullet, and it is quite probable that these are of typhoid origin. He has collected records of other nine cases, making ten in all.

Fratti[3] publishes a case of stenosis from lordosis of the vertebral column, and sinking-in of the sternum, due to osteo-malaria.

J. Rilus Eastman[4] recommends, where possible, the **Direct Dilatation** of cicatricial œsophageal stricture. He uses bougies of silk web and of spiral-wound steel wire, filed flat and smooth, each containing a withdrawable soft lead core. They can be directed more easily, and can be X-rayed while in the gullet.

Dr. C. N. Dowd[5] showed a girl, aged four, who had swallowed lye; the ensuing stricture could not be dilated, either from above or from the stomach, and was finally permeated by the child swallowing a fine silk thread as advocated by Dr. Dunham[6]; the stricture was subsequently dilated by sawing with a thread, and then drawing a stretched elastic tube through, as recommended by Dr. Curtis[7].

References.—[1]*Prag. Med. Woch.* No. 38, 1903; see *Treatment*, 1903; [2]*Ann. Surg.* May, 1904; [3]*Gaz. deg. Osped.* Dec. 27, 1903; see *Brit. Med. Jour.* May 14, 1904; [4]*Ann. Surg.* Feb. 1904; [5]*Ibid*, Feb. 1904; [6]*Ibid*, p. 350, Mar. 1903; [7]*Ibid*, vol. xxxi. p. 352.

**ŒSOPHAGUS (Surgery of).** *Priestley Leech, M.D., F.R.C.S.*

Whipham[1] reports a case of rupture of the œsophagus from accident. The patient, a man of twenty-seven, had been thrown from a horse, fracturing the skull, and died twenty-four hours later. On examination a rupture of the œsophagus was found at its lower end just above the diaphragm; it was longitudinal, 1½ inches long on the posterior aspect of the gullet, and communicated directly with the left pleural cavity. There was no sign of a previous lesion at the site of the rupture, and it was obviously of recent occurrence. This case seems unique. There are some 23 undoubted records of other accidents, and 33 are mentioned by one author; it is more frequent in males, and the majority are in persons of middle age; in all these the lesion was apparently produced by the act of vomiting. Emphysema of the chest wall, or of the neck and face, was present in 16 cases, and absent in 3, while in 12 no mention is made; pneumothorax was mentioned in 16 cases. All were uniformly fatal.

*Foreign Bodies in Œsophagus.*—Targett and Atkinson[2] record a case where a drunken man had forced three corks into the œsophagus of a child ten months old; the child died of septic broncho-pneumonia; one of the corks was impacted in the gullet immediately below the level of the cricoid cartilage, and had caused ulceration of the windpipe; fluid could pass by the side of the cork into the stomach; the two other corks were in the stomach.

Fullerton[3] records a case of a halfpenny being in the gullet of a child seven years old for seven months. The child vomited foul-smelling stuff at intervals. A skiagraph showed the halfpenny almost in the middle line opposite the bodies of the third and fourth dorsal vertebræ. **Œsophagotomy** was performed on the left side and the coin removed, being about 4½ inches from the wound; the œsophageal wound was closed by continuous suture of formalin catgut for the mucous membrane, and another for the muscular coat. The child recovered.

W. G. Spencer[4] reports a case of impaction of a tooth-plate in the œsophagus, which was also removed by œsophagotomy; the walls of the œsophagus were so friable that they could not be sutured, so a tube was placed in the wound down to the opening, and the rest of the wound was packed with iodoform gauze. The patient was fed

rectally for a week, and was discharged with the wound healed in about three weeks.

T. Toubert[5] also communicates a case of successful removal by external œsophagotomy of a tooth-plate, which had become impacted in the œsophagus just above the sternal notch. He thinks attempts at removal by the mouth are more likely to do harm than good, and recommends operation, after confirmation of the presence of the plate by the X-rays.

REFERENCES.—[1]*Lancet*, Sept. 12, 1904; [2]*Ibid*, July 23, 1904; [3]*Brit. Med. Jour.* May 7, 1904; [4]*Lancet*, Aug. 22, 1903; [5]*Bull. et Mém. de la Soc. de Chir. de Paris*, No. 39, 1903; see *Brit. Med. Jour.* Feb. 20, 1904

**ONYALAI.** *J. W. W. Stephens, M.D.*

Under this title Massey[1] describes a peculiar affection noticed by him in Benguella, W. Africa. The following is an illustrative case. The patient complains of bleeding from the mouth. Examination reveals a dozen vesicles distended with blood, one quarter to half an inch in diameter, situated on the hard palate and buccal mucous membranes. In some cases there is a febrile attack and hæmaturia.

REFERENCE.—[1]*Jour. Trop. Med.* Sept. 1, 1904.

**OPHTHALMIA NEONATORUM.** *A. Hugh Thompson, M.D.*

The prophylaxis of this disease (a subject treated in the last number of the *Annual*, p. 248–9) gave rise to an interesting discussion at the Obstetrical Society[1]. Stephenson strongly advocated the routine employment of a 2 per cent solution of **Silver Nitrate** as being more reliable than any alternative method. Other speakers pointed out that although no serious trouble followed its use, it almost always produced some conjunctival irritation; and, as Dr. Herman remarked, a young practitioner who should give people occasion to say of him that he "always did something to newly-born children which inflamed their eyes," would find himself much handicapped, as he could not explain that he did it lest the eyes should be infected with gonorrhœa. He therefore advocated **Corrosive Sublimate** (1–2000) as a routine solution, reserving the silver drops for really suspicious cases. Treacher Collins pointed out that one circumstance that rendered newly-born children liable to ophthalmia was that they secreted no tears, so that even bathing the eyes with water had a good effect. The profession generally did not yet realize the great value of employing prophylactic measures against the disease, for in nearly half the cases occurring in his practice he found that the mothers had been attended by medical men. Dr. Lockyer mentioned the success with which **Protargol** has been employed abroad; while nitrate of silver in 2 per cent solution gave rise to some irritation in 96 per cent of the cases treated, protargol did so in only 20 per cent. [The strength of the latter solution advocated is reported as 2 per cent, but this is obviously a misprint for 20 per cent, as the latter strength corresponds to the 2 per cent silver solution, and is certainly less irritating.]

REFERENCES.—[1]*Brit. Med. Jour.* July 18, 1903.

**OPTIC ATROPHY AND NEURITIS.** *A. Hugh Thompson, M.D.*

The evidence is gradually accumulating that *optic neuritis* may occur as a complication of various conditions besides intracranial or orbital disease. Dr. Antonelli[1] maintains that all or nearly all infectious diseases are capable of provoking an optic neuritis by the direct action of the toxin on the optic nerve. The neuritis which occurs may be either a papillitis, or a retro-ocular neuritis, and in the latter case the ophthalmoscopic signs may be very slight. The prognosis is usually good, but when a high degree of amblyopia lasts for more than two or three weeks, complete cure is improbable. Influenza affords the commonest cases, and next to it typhoid, malaria, mumps, and diphtheria. Cases which occur in the course of measles, scarlet fever, and small-pox are many of them due to the intervention of meningitis or otitis media, which would bring them into the category of those due to intracranial disease, but in a few published cases this can be excluded.

Since Antonelli's article was published, Freeland Fergus[2] has recorded a case of unilateral optic neuritis following small-pox. In syphilis the occurrence of optic neuritis as a late secondary or tertiary symptom has long been known. In anæmia and chlorosis also, neuritis and neuro-retinitis occur. Indeed, according to Jameson Evans[3], these conditions are far from being rare. In some of the more acute cases vision is only slightly below normal during the early stages; an unfortunate circumstance, since it may prevent a diagnosis of the condition from being made until optic atrophy has commenced and the sight been permanently damaged. To avoid such a calamity all cases of profound or even marked anæmia should be examined ophthalmoscopically. If neuritis is found, it is necessary to exclude syphilis and intracranial growths. Failing these, the anæmia itself is the probable cause. If the case is diagnosed early and treated energetically, the prognosis with regard to recovery of sight is good. This is true even of cases showing pronounced neuritis of the choked disc type. The treatment is the ordinary routine for chlorosis—**Iron** with or without **Arsenic**, due attention to the intestinal tract, and **Rest in Bed.** A darkened room is not advisable; but complete rest both of body and of the eyes is essential.

The ocular symptoms of *multiple sclerosis* have been attracting a good deal of attention of late years[4]. Optic neuritis occurs rarely, but far more common is a slight pallor of one or both discs. In a few cases this may go on to complete atrophy. Alterations in the field of vision may occur, which sometimes render the diagnosis of this condition from toxic amblyopia very difficult. There may be either an absolute central scotoma, a relative central scotoma, or peripheral contraction of the field, and these conditions may be variously combined in one or both eyes. In addition to these symptoms the pupils may be anomalous; there is usually, as is well known,

some nystagmus ; and there may be paralysis of the external ocular muscles, the external rectus being the most susceptible.

Several cases have been recorded of blindness due to *optic atrophy following severe hæmorrhage.* So long ago as 1876, records of over 100 such were collected by Fries, in 61 per cent of which both eyes became blind. In the majority of cases the hæmorrhage was intestinal or uterine, and, as Haab says[5], "Every physician should know that hæmorrhage from the stomach, bowels, or uterus threatens an incurable blindness." Stirling[6] reports a case in which vision was reduced to the counting of fingers in each eye, as the result of severe hæmorrhage following the extraction of a tooth in a boy of four years old ; the child was apparently a "bleeder." The most probable explanation of these cases is that owing to the sudden fall of general blood-pressure the blood is unable to penetrate into the retinal arteries against the resistance of the normal intra-ocular tension. Degeneration of the ganglion cells of the retina is the result, leading to optic atrophy.

REFERENCES.—[1]*Ophth. Rev.* Feb. 1904 ; [2]*Ibid,* July,1 904 ; [3]*Lancet,* May 14, 1904 ; [4]*Ophth. Rev.* May, 1904 ; [5]Norris & Oliver : *Diseases of the Eye,* iv. 488 ; [6]*Ophth. Rev.* Aug. 1904.

**ORAL SEPSIS and HYGIENE.** *G. Turner, F.R.C.S., L.D.S.*

The meeting of the B.M.A. at Oxford produced an interesting discussion on oral sepsis. Dr. Hunter related observations of cases of septic gastritis due to streptococcus, in which there was the foulest oral sepsis. He had met with a similar condition of the mouth in cases of septic enteritis and ulcerative colitis. In perforation due to typhoid fever, he was of opinion that the perforation was always due to some superadded infection, which he strongly suspected was supplied by the mouth. Oral sepsis he considered to be one of the possible sources of infection in cases of malignant endocarditis, purpura, hæmorrhage, and nephritis. The anæmia of oral sepsis he divided into two classes : septic anæmia, in which there is an absence of hæmolysis ; and pernicious anæmia, with hæmolysis and intense bone-marrow changes.

Kenneth Goadby shortly summarized the bacteriology of oral sepsis in cases due to the various forms of pyorrhœa alveolaris. In gingivitis the largest bacteria were found ; almost all morphological forms were to be found on making a cover-slip preparation : staphylococci, sarcinæ, spirilla, comma-shaped bacilli, long curved rods, short thick bacilli, long pointed bacilli, and fine threads. Progressive peri-odontitis: rods 4$\mu$ to 6$\mu$ long, 0·75$\mu$ wide, in masses ; threads 10$\mu$ to 2$\mu$ long, many beaded with large darkly-stained dots, similar to the staining of diphtheria bacillus by Neisser ; irregular twisted filaments with occasional branching ; thick-jointed rods, sometimes giving the granulose reaction ; cocci were generally found, but spirilla and comma-shaped forms, except spirochætal, were reduced in numbers. Subacute alveolar osteitis : fragmented mycelium which might stain

with Gram ; thick bacilli with pointed ends, the bases of two being in opposition ; bacilli of a short diphtheria-like form, and cocci, the last two being found associated in the depths of the socket. Comma and spirillum forms were generally absent in this last form, and although often increased in the various forms of stomatitis, they were not related to any one condition. In a case of acute phemphigus accompanied by severe oral sepsis, a pure culture of a bacillus was obtained from blood drawn from the median basilic vein, and a similar bacillus was isolated from the mouth. A curious slow necrosis was found in some of the animals inoculated, which was specially interesting in view of the possible relation of oral sepsis to gastric ulcer. He quoted Hemmeter, that in gastric ulcer there is another kind of infection which is not accompanied by the signs of acute inflammation, and is termed bacterial necrosis by some authors.

Goadby concluded from a general survey of the facts, that a certain degree of virulence might be possessed by an organism living an apparently saprophytic existence in the mouth ; that inflammatory conditions had the effect of increasing the number of species as well as the total number of bacteria present ; that a sort of selection took place, but whether due to symbiosis or not was difficult to say ; that mouth bacteria did at times gain access to the general blood stream ; that the potentiality for disease of oral sepsis was probably greater than at present credited.

Rickman Godlee emphasized the need for scrupulous oral cleanliness on the part of the operating surgeon, lest a wound be infected by any accidental expectoration of saliva. He called attention to the danger of septic mouths in house-pets, and of even slight operations in a septic mouth. With reference to the amount of pus which might be swallowed in a case of oral sepsis, he instanced a case in which he operated for suppurative tonsilitis. The patient was properly prepared for operation ; no blood was swallowed ; but vomiting occurred, and two tablespoonfuls of pus were brought up which must have been swallowed during the previous twelve hours.

J. G. Turner thought lesser degrees of ill-health from oral sepsis far commoner than was generally thought. The worst cases of oral sepsis he had seen had been cases of pyorrhœa alveolaris. Both pyorrhœa and profound oral sepsis were rare in children. Local injuries in chronic septic mouths, by breaking through the layer of interstitial granulation tissue, might lead to rapid absorption and acute local or general infection.

Edmund Owen[1] denounces the habit of leaving roots under artificial tooth plates, and of the insertion of bone and bridge work in any and every case, as productive of local surgical disease (such as chronic glandular enlargement) eventually requiring operation.

*Dangers of Oral Sepsis in Anæsthesia.*—Snell[2] shows that during, and for an hour or so after, chloroform or ether narcosis, the bactericidal

power of the lungs is markedly diminished. Hence post-anæsthetic pneumonia is a very real danger when dealing with patients with septic mouths.

*Antiseptics.*—Bernard Bennett[3] recommends **Sodium Dioxide**, either as a powder or in saturated solution as an antiseptic, and specially as a bleacher in treating dead teeth. When using as a bleacher, partly fill with the powder, or soak with the solution, add a drop of dilute sulphuric acid, and seal loosely with gutta-percha. To make a solution, surround a beaker of distilled water with a packing of ice and salt, and add the powder of $Na_2O_2$ slowly. The solution will then be formed without effervescence. Keep in the dark.

He also[4] recommends **Camphenol** in a modified form. It is prepared as follows.—

℞ Acid carbol. liq. ʒii
Camphor
Menthol āā ʒij or q.s.
Thym l

Place the last three in a 3oz. bottle, pour in the carbolic acid, shake, and allow to stand till clear (perhaps three days); add of above mixture of camphor, menthol and thymol till saturation takes place. Decant and keep in a dark bottle. It may be injected direct into the cavity in a case of chronic abscess.

The following mouth-washes and dentifrices may be found useful, being antiseptic and at the same time agreeable.

| | | | |
|---|---|---|---|
| ℞ Salol | 10 grams | Spirits of mint | 20 grams |
| Spirits of scurvy-grass | 40 ,, | Spirits of lemon | 20 ,, |
| Spirits of lavender | 40 ,, | | |

M.—Mouthwash. A teaspoonful in a glass of water.

| | | | |
|---|---|---|---|
| ℞ Thymol | 2 grams | Spirits of rosemary | 25 grams |
| Tinct. of pyrethrum | 60 grams | Spirits of roses | 25 ,, |
| Tinct. of vanilla | 10 grams | | |

M.—A few drops in a half-glassful of water.

| | | | |
|---|---|---|---|
| ℞ Resorcin | 8 grams | Spirits of lavender | 120 grams |
| Salol | 8 ,, | | |

M.—A teaspoonful in a glass of water.

The best dentifrice is charcoal. It should be mixed with sufficient white powder to lose its colour. The following powder is grey:—

| | | | |
|---|---|---|---|
| ℞ Vegetable charcoal | 5 grams | Salol | 2½ grams |
| Magnesium carbonate | 20 grams | Essence of Mint | 10 grams |
| Sodium bicarbonate | 2½ grams | | |

M.—Toothpowder.

| | | | |
|---|---|---|---|
| ℞ Vegetable charcoal | 5 grams | Resorcin | 1 gram |
| Powdered cinchona | 20 grams | Essence of cloves | 5 drops |

M.—Toothpowder.

If the patient insists on a white powder, give :—

| | | | |
|---|---|---|---|
| ℞ Boric acid | 5 grams | Powdered chalk | 10 grams |
| Magnesium carbonate | 10 grams | Essence of roses | 5 drops |

M.—Toothpowder.

If a rose-coloured powder is desired, add five cgrams of carmine to the preceding.

REFERENCES.—[1]*Med. Press Rec.* May 27, 1903 ; [2]*Treatment*, Oct. 1903 ; [3]*Dental Rec.* June, 1904 ; [4]*Ibid*, Feb. 1904 ; [5]*Jour. des Prat.* July 23, 1903.

**OSTEO-ARTHROPATHY** (Secondary Hypertrophic). *Robt. Hutchison, M.D.*

An elaborate study of this rare condition has been made by Wynn[1]. His conclusions are based upon 130 cases collected from the literature, 100 of which he regards as typical. To these he has added two cases of his own. The majority of these have been published subsequently to 1890, in which year Marie's original description appeared. From these cases a definite clinical picture can be constructed.

1. Symmetrical enlargements of the hands and feet : (*a*) Clubbing of the ends of the fingers and toes ; (*b*) Thickening of the diaphyses of long bones ; (*c*) Effusions and other changes in the joints ; (*d*) Enlarged, markedly curved nails.
2. Similar enlargements of the bones, and changes in the joints of the arms and legs.
3. Less constant enlargement of other bones.
4. Muscular wasting in the limbs.
5. Often some affection of the skin.
6. Less constant changes in nerves, ductless glands, urine, etc.

*Symmetrical Enlargement of the Hands and Feet* is the most prominent feature in all cases. The fingers show the greatest change. All of them are affected, but the changes are usually most marked in the thumb, index, and middle fingers. According to the position of the greatest enlargement, the fingers resemble a drum-stick or spindle, or more often the two combined. The enlargement is due to thickening both of the soft parts and of the bones. The nails are widened, elongated, and curved so as to resemble a parrot's beak. This is really just an exaggeration of the change found in ordinary clubbing. Besides the bones of the hands and feet, the radius and ulna are affected in all well-marked cases. The enlargement begins just above the wrist joints, and extends upwards for four or five inches, and then ends rather abruptly. The tibia and fibula show a similar alteration, but the enlargement is less abrupt and, more often than in the forearms, affects the whole shafts. The femora are rarely affected. Enlargement of the outer third of the clavicle, and of the acromion and spine of the scapula, has been noticed, as well as of the ribs and iliac crests. The cranial and facial bones are never involved.

*Disease of the Vertebral Column* is common, in the following forms :—

1. Angular curvature from caries.

2. Kyphosis, often affecting a considerable length of the spine. Marie described it occurring as a late feature of the disease, and as dorso-lumbar in contra-distinction to the dorso-cervical curve of acromegaly, but no such distinction can be made. It is doubtful, too, how far it is an essential condition of the disease, and not accidental from associated lung disease, caries, or even from lying on the back.

3. Scoliosis, secondary to the thoracic condition.

4. Enlarged spinous processes.

The joint changes take the form of synovial and peri-articular thickening, with effusion. The joints most commonly affected are the wrists, ankles, and knees ; less often the elbows, shoulders, and small joints of the hands and feet. The hips usually escape. The sterno-clavicular joints were affected in one case, but involvement of the temporo-maxillaries has not been observed. Both the joint and bone changes are unaccompanied by pain or tenderness, except when the onset has been rapid, or during an exacerbation. The onset is usually insidious, but sometimes it is rapid, with pain and tenderness. There is no tendency whatever to form pus, and no signs of acute inflammation or formation of adhesions.

The muscles of the affected limbs usually show signs of wasting, but this is less symmetrical than the osteo-arthropathic lesions.

Diagnosis.—*Acromegaly* has been the greatest cause of confusion in diagnosis, and even now the German school is reluctant to regard the two conditions as distinct. But :—

1. Acromegaly is a primary disease, coming on gradually in apparent health, about or after puberty. Its course is steady and continuous. Osteo-arthropathy is secondary to disease, generally of the lungs, but sometimes of other organs ; it occurs at all ages, its onset is more rapid, and its course is subject to variations.

2. In acromegaly the whole hand is equally affected, or the meta-carpal region more than the fingers. The hand is broad and spade-like, and is not distorted. In osteo-arthropathy the fingers are much enlarged and the ends clubbed ; the hand itself escapes. There is considerable deformity. The nails are normal in acromegaly ; enormous and curved in osteo-arthropathy.

3. Joint affection is rare in acromegaly ; usual in osteo-arthropathy.

4. The face, tongue, and lower jaw are enlarged in acromegaly ; normal in osteo-arthropathy.

5. The genitals, cartilages of ears, nose, eyelids, and epiglottis are enlarged in acromegaly ; very rarely, if ever, enlarged in osteo-arthropathy.

6. In the affected parts all the tissues are generally hypertrophied in acromegaly ; in osteo-arthropathy the hypertrophy is chiefly bony, except at the tips of the fingers and toes.

7. Acromegaly is fatal ; osteo-arthropathy not fatal, of itself.

8. The pituitary body is enlarged in acromegaly; no enlargement in osteo-arthropathy.

There are several other points of difference, but the resemblance of these two diseases seems to have received too much emphasis, chiefly from Marie basing his original description of hypertrophic osteo-arthropathy upon a case of acromegaly. The resemblances are only superficial, and the etiology and pathology quite distinct.

One must conclude that if the disease is the result of the action of toxins, these can be produced in the absence of pus, and it becomes necessary to search for other sources for their production. After discussing the possible influence of syphilis, cardio-vascular disease, the nervous system, and the ductless glands, the author concludes that all factors can probably be excluded except the action of toxins. He believes that these may arise in the alimentary canal. It must be admitted, however, that the evidence he adduces in favour of this view is not very convincing. The value of the paper is greatly enhanced by an elaborate bibliography and analysis.

REFERENCE.—[1] *Birm. Med. Rev.* April & May, 1904.

**OSTEOMYELITIS (Infectious).** *Priestley Leech, M.D., F.R.C.S.*

Nichols[1] reports eleven cases of osteomyelitis. Drainage of the soft parts is not sufficient; the bone marrow is often infected and must be drained; a portion of the cortical bone must be removed by the trephine; curetting of the bone marrow should not be done, as it causes extensive destruction of the endostium; operate as early as possible. In the subacute stage, remove the necrotic shaft completely or partially at an early stage; for mechanical reasons the manipulation of the periosteum is easier after ossification of the periosteum has begun, but while the membrane is still plastic, and the rapidity and surety of perfect regeneration seem greater at that time. Early performance of an operation, and removal as far as possible of all infected areas, lead to an earlier success.

REFERENCE.—[1] *Jour. Amer. Med. Assoc.* Feb. 13, 1904.

**OVARIES (Diseases of).** *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

*Ovarian Grafting.*—Morris[1] has been carrying on some interesting experiments on this subject. His main conclusions are as follows: (1) When the ovaries are removed from an animal and then replaced at some point near the original site, or even at a distant point, the tendency is for the ovary to continue its function of secreting ova and furnishing internal secretion. Such a transplanted ovary may continue to do normal work for an indefinite period. (2) When ovaries are removed from one animal and transplanted to another animal of the same kind, which has had its ovary removed, the tendency is for the grafted ovary to undergo degeneration. The graft will continue to develop ova and furnish secretion for several months in some

instances, but at the end of a year the grafts are often found useless and fatty. It is to be assumed that the serum of one animal is destructive to the introduced tissues of another of the same sort.

These results are suggestive ; it is perhaps a question how far they are likely to lead to practical results in surgery. The author, however, claims that even so far as they go they have a practical bearing. Thus, he says that if in a case of pyosalpinx it is necessary to remove the ovaries and oviducts *en masse*, a part of a fairly good ovary may be grafted beneath the peritoneum at some point near its original site before closing the abdomen, thus preventing premature menopause. With a piece of another woman's ovary the patient might menstruate for several months, and have the benefit of the internal secretion. It may even be possible for her to become pregnant before the graft degenerates, but thus far this has occurred only in rabbits, and very shortly after the graft was introduced.

The method employed by the author consists in putting a piece of an ovary into a pan of saline solution at the temperature of 100° F. until the operation is completed. A segment of ovary is then inserted through a slit in the peritoneum somewhere near its original site, in such a way that the raw surface of the ovary is extra-peritoneal, where it can be nourished by the lymph circulation until new capillaries are formed for its support. Part of the ovary is allowed to protrude into the peritoneal cavity, so that the ova may escape into the oviducts in case such a possibility exists. One or two fine catgut sutures serve to hold the graft in place.

*Removal of the Ovaries for Inoperable Cancer.*—This procedure is at present viewed with a certain distrust ; and, we think, rightly so. We believe that the majority of cases in which it has been tried have turned out failures. Such an one is recorded by Dukes[2]. On the other hand, some cases have been put on record where the procedure appears to have met with undoubted success. One remarkable instance has lately been shown to the Académie de Médecine by Dr. Reynes[3], of Marseilles. The time is not yet ripe for a final verdict on the value of oöphorectomy in cancer. It is well, meantime, to remember that cancer has a remarkable faculty of disappearing in a particular case under some particular mode of treatment. There is hardly a form of treatment that has not met with some isolated success ; but when, on the strength of this result, the same treatment is applied to other cases, nothing but failure and disappointment is recorded.

*Pregnancy after Removal of both Ovaries.*—From time to time extraordinary cases have occurred of conception taking place under seemingly impossible conditions, such as after removal of both ovaries. An interesting case of this kind is related by Meredith[4].

References.—[1]*Amer. Jour. of Obs. and Gyn.* Sept. 22, 1903 ; [2]*Lancet*, May 14, 1904 ; [3]*Med. Press*, May 11, 1904 ; [4]*Brit. Med. Jour.* June 11, 1904.

**OZÆNA.** (*See* Rhinitis.)

**PALATE.** (*See* CLEFT PALATE).

**PANCREAS** (**Surgery of**). *A. W. Mayo Robson, F.R.C.S.*

In my *Hunterian Lectures* on the pathology and surgery of certain diseases of the pancreas[1], may be found not only a review of work that has been previously done on pancreatic diseases, but also an account of further original work resulting from an experience of over a hundred operations on the pancreas. The importance of the anatomical relation of the bile and pancreatic ducts and their varieties, as a cause of pancreatitis, cannot be over-estimated, and especially the relation of the terminations of the ducts to the ampulla of Vater. Compression of the chief bile duct by a swollen pancreas accounts for many of the cases of so-called catarrhal jaundice, and on the extent to which the bile duct is surrounded by the gland, will depend the intensity or otherwise of the jaundice.

*Symptomatology and Pathology.*—As our knowledge of the functions of the pancreas, both with regard to digestion and metabolism, is becoming fairly well established, it would seem probable that any departure from the normal would lead to such considerable disturbance of function that the symptomatology of any of the diseases of the pancreas would be so marked as to make the diagnosis easy. But this is far from being the case, for several reasons. First, it is seldom the case that the pancreas is diseased without other organs participating, *e.g.*, the relations between cholelithiasis and pancreatitis; between gastro-intestinal catarrh, and catarrh of the bile and the pancreatic ducts; between ulcer or tumour of the stomach, and extension to the pancreas; between affections of the liver, colon, lymphatic glands, and duodenum, and pancreatic disease. Secondly, every function performed by the pancreas may be vicariously taken up by another organ, except the glycogenic function, and that we are not yet certain about. The stomach can digest albumin, the salivary and intestinal glands have the power of digesting starches, and the bile and intestinal secretions can emulsify fats. Thirdly, a considerable portion of the gland may be necrosed and cast off or otherwise disabled, and yet the portion remaining may apparently be sufficient to carry on the functions of the pancreas. For instance, in a case of my own, a patient, who is now perfectly well, had necrosis of the pancreas, which I removed at operation. Fourthly, in some cases the true cause of the disease may lie in the pancreas, and yet all the symptoms may be caused by implication of another organ. For instance, cancer of the head of the pancreas produces intense jaundice and distension of the gall-bladder, giving the appearance to the uninitiated of disease of the liver or bile ducts, a symptom to which I drew attention in a paper at the London Clinical Society in 1889. Again, a tumour of the pancreas may compress the intestine and produce intestinal obstruction, or lead to pressure on the neighbouring ganglia, and cause most violent pain, that may be referred to spinal disease, to aneurism,

or to anything but the real cause. Thus it will be seen that very conflicting combinations of symptoms may arise, and lead to great difficulty in diagnosis unless we can find some definite signs that will help us to say whether or not the pancreas is participating in the disease.

The symptoms may be conveniently classified under (1) Digestive symptoms; (2) Physical signs; (3) Metabolic symptoms; and (4) Symptoms artificially produced.

1. Digestive symptoms: (*a*) Steatorrhœa, or fatty stools; (*b*) Azotorrhœa, or faulty digestion of albuminous foods; (*c*) Sialorrhœa; (*d*) Diarrhœa; (*e*) Dyspeptic disturbances; (*f*) Emaciation; and (*g*) Nausea and vomiting.

2. Physical signs: (*a*) Presence of swelling or tumour; (*b*) Fever; (*c*) Pain and tenderness with muscular resistance; (*d*) Pressure on adjacent organs; (*e*) Hæmorrhage; and (*f*) Jaundice.

3. Metabolic symptoms: (*a*) Glycosuria; and (*b*) Other urinary changes.

4 Special symptoms obtained by artificial means: (*a*) Alimentary glycosuria; and (*b*) Salili's symptoms.

For an account of the relative importance of these symptoms I would refer to the first lecture, where they are considered in detail. In connection with the metabolic signs, the reactions obtained by Dr. P. J. Cammidge in the urine of patients suffering from acute or chronic pancreatitis is of help in diagnosis: and though it is not absolutely pathognomonic of any special disease, when taken along with other signs it affords valuable assistance in the diagnosis of inflammations of the pancreas, and even assists in differentiating them from cases of malignant disease. (*See* URINE.)

*Fat Necrosis.*—Fat necrosis was first described by Balser in 1882, but has since been investigated by Langerhans, Hildebrand, Dettmer, Milisch, Williams, Flexner, Opie, and many others. Experiments by Opie, who ligatured the pancreatic ducts in the cat, go to show that widespread fat necrosis may be expected to follow the operation very rapidly. A photograph of this was shown on the screen, and at the same time a micro-photograph of fat necrosis.

By fat necrosis is understood a disintegration or necrosis of the living fatty tissues in the neighbourhood of the pancreas, or in small spots diffused widely over the peritoneal cavity, or even in the pericardium or pleura or subcutaneous fat. It is associated with a splitting up of the fat into fatty acids and glycerin; the latter is absorbed, but the acids, being insoluble, remain in the cells either as crystals, or uniting with the calcium salts of the blood, they form yellowish-white patches of various sizes. Fat necrosis is commonly found in association with pancreatitis and other diseases of the pancreas, and the relation between the two conditions has given rise to much speculation. As the result, however, of clinical observation and experimental evidence, we may now accept the fact that it is always

the result of the penetration of the fat-splitting ferment of the pancreas, first into the tissues in the neighbourhood of the gland, and when more extensive, to the diffusion of the ferment either through continuity of tissue or by means of the lymphatics. It is important to remember that fat necrosis may be present, and yet not be visible to the naked eye, although it may be discovered by a method suggested by Bender, the application of a solution of acetate of copper to the tissues. The recognition of fat necrosis by the surgeon who opens the abdomen to relieve symptoms associated with peritonitis in the upper abdomen, is of the utmost importance, as it indicates a grave lesion of the pancreas, probably hæmorrhagic, gangrenous, or suppurative pancreatitis. It is said not to occur generally with suppurative inflammation, but in a case to be related shortly, I found a most extensive fat necrosis in association with subdiaphragmatic abscess of pancreatic origin. It has also been said that the presence of extensive fat necrosis is a fatal sign, but a case of my own disproves this, as the patient under my care made a complete recovery after an operation undertaken for acute pancreatitis, in which the fat necrosis was well marked and diffuse. Truhart has also been able to collect ten cases in which the diagnosis was made, and yet an immediately fatal issue did not occur. As the ferment causing fat necrosis may be excreted by the kidneys, it would form an important diagnostic sign if it could be found in the urine, but this has not yet been determined, although in one case of acute hæmorrhagic pancreatitis Opie obtained a suggestive reaction by means of ethyl butyrate, as suggested by Castle and Löwenhart.

*Hæmorrhage.*—Hæmorrhage in its various forms is often held up as one of the great mysteries of pancreatic affections, and the free use of the term "hæmorrhagic pancreatitis" in ordinary acute inflammation, even where there has been really no hæmorrhage, and in others no more bleeding into the tissues than takes place frequently in acute inflammation in other organs where the tissues are soft, has led to an accentuation of the mystery. It is well known that local hæmorrhage into the pancreas may occur apart from injury, and apart from any general hæmorrhagic tendency, and that although it may be recovered from, as shown by the remains of extravasated blood in the gland in persons dying from other diseases, yet such spontaneous hæmorrhage may lead to death from collapse, either immediately or after some hours. Curiously, this may occur in persons apparently in good health, and without any premonitory signs on which a diagnosis can be based, the only symptoms at the time being those of collapse, with dyspnœa and feeble pulse. In this way, severe pancreatic hæmorrhage forms a disease in itself.

The following are causes of pancreatic hæmorrhage :—

1. Vascular disease, such as atheroma and fatty degeneration, or alcoholic or syphilitic arteritis.

2. Injury.
3. Fatty degeneration of the gland cells and deposit of fat in the pancreas, the result of alcoholism or of general adiposity.
4. Fat necrosis in the gland or its vicinity.
5. Disintegration of neoplasms.
6. Hæmorrhage from embolism of a pancreatic artery.
7. Heart disease.
8. Lung disease.
9. Cirrhosis of liver.
10. Hæmorrhagic diathesis.
11. Scurvy.
12. Purpura.
13. The exanthemata.
14. Phosphorus poisoning.
15. Pancreatitis may undoubtedly lead to hæmorrhage, and in considering acute pancreatitis I shall refer to it again, but it seems highly probable that an effusion of blood into the pancreas from one of the before-mentioned causes should more frequently be the cause rather than the effect of pancreatitis, owing to disruption of the secreting tissue, escape of the proper secretion of the gland, fat necrosis, and invasion of the effusion by organisms, either through the ducts or in some other way. Large pancreatic hæmorrhages are of great interest clinically, and are probably more common than is usually thought; they may occur into the substance of the gland and disintegrate it, or on the surface and lead to extensive effusion, either beneath the peritoneum or into the lesser sac, as in the case which I have related.

*Inflammatory affections of the Pancreas.*—Pancreatic inflammations may be (1) Catarrhal, in which the inflammatory trouble is in the ducts: or (2) Parenchymatous, in which the substance of the pancreas is involved. The former resemble the different forms of cholangitis, with which, indeed, they are frequently associated: the latter bear more resemblance to inflammatory affections of the appendix, "suppurative and gangrenous appendicitis." The following shows the classification at a glance.

1. Catarrhal inflammations. (*a*) Simple catarrh, acute and chronic; and (*b*) Suppurative catarrh.

2. Parenchymatous inflammations. Acute: (*a*) Hæmorrhagic pancreatitis: (i.) Ultra-acute, in which the hæmorrhage precedes the inflammation, the bleeding being profuse and both within and outside the gland; (ii.) Acute, in which inflammation precedes the hæmorrhage, which is less profuse and is distributed in patches through the gland. (*b*) Gangrenous pancreatitis. (*c*) Suppurative pancreatitis (diffuse suppuration). Subacute: Abscess of the pancreas (not diffuse suppuration). Chronic: (*a*) Interstitial pancreatitis: (i.) Interlobular; and (ii.) Interacinar. (*b*) Cirrhosis of the pancreas.

The etiology of pancreatitis may be classified under predisposing and exciting causes. Among the predisposing causes are : (*a*) Obstruction in the ducts, the result of gall-stones, duodenal catarrh, pancreatic calculi, cancer of the papilla or the head of the pancreas, ulcer of the duodenum followed by cicatricial stenosis of the papilla, ascarides, and lumbrici. (*b*) Injury, either from a bruise, as by manipulation in operating, or from a crush, as by a blow in the epigastrium, or from wounding by a sharp instrument. (*c*) Hæmorrhage into the gland. (*d*) General ailments, such as typhoid fever, influenza, and mumps. (*e*) Certain anatomical peculiarities in the pancreas or its ducts. (*f*) Atheroma, or fatty degeneration of the blood-vessels.

The chief exciting causes are : (1) Infection conveyed either (*a*) from the blood, as in syphilis or pyæmia ; (*b*) from the duodenum, as in gall-stone obstruction, or gastro-intestinal catarrh ; and (*c*) by extension inwards from adjoining organs, as in gastric ulcer, or cancer eroding the pancreas. (2) Irritation, as in alcoholism (doubtful).

*Catarrh* of the pancreas in its several forms is a recognizable and not an uncommon disease, and one which is amenable to treatment. Suppurative catarrh is an extremely serious disease, bearing the same relation to simple pancreatic catarrh that simple catarrhal jaundice does to suppurative cholangitis. It is frequently caused by gall-stones impacted in the common duct, and is therefore amenable to operative treatment. Cases of this disease are described in the second lecture. Acute pancreatitis is also shown to be frequently dependent on cholelithiasis, though it may arise from other causes, as by extension of septic inflammation along the common bile duct from the duodenum. The symptoms and diagnosis and treatment are fully considered, and a number of cases that have come under my care are described in the second lecture. The treatment of these acute conditions by early operation and evacuation of septic fluid is of the utmost importance. Of 59 reported cases of operations during the acute stage, 23 recovered.

Subacute pancreatitis ending in abscess is more amenable to treatment. I have personally operated on seven of these cases.

By chronic pancreatitis is understood an interstitial change in the pancreas of an inflammatory character, leading to the formation of fibrous tissue. It may be *interlobular*, in which case it exerts pressure on, and causes atrophy of, the true glandular substance of the pancreas, and interferes with its digestive function ; or *interacinar*, in which case the fibrous tissue invades also the islands of Langerhans, and leads not only to an interference with the digestive, but also with the metabolic functions of the gland, and so to glycosuria. In cystic disease of the pancreas some interstitial pancreatitis is usually present, and in many cases the chronic inflammatory process is the true cause of cyst formation. In an advanced condition, the gland may be atrophied, small, and cirrhotic, almost like true cirrhosis of the liver. Chronic interstitial pancreatitis may be *primary*, as in those cases

recovering from the acute or subacute forms of pancreatitis, or from acute or chronic or suppurative catarrh; or it may be *secondary*, as in syphilis, alcoholism, and arterial degeneration, and in the zymotic diseases, such as typhoid fever and influenza. The inflammatory process, which is in the primary forms essentially due to a mild form of infection, may be *general* throughout the gland, or *limited* to certain portions, especially the head. The most frequent cause of chronic interstitial pancreatitis is cholelithiasis, which causes obstruction to the pancreatic ducts, and thus leads to an infective process which extends to the parenchyma; but anything causing duct obstruction, such as pancreatic calculi, stenosis from ulceration or growth, may act in the same way. It may also follow catarrh extending upward from a duodenal catarrh or from a cholangitis, or it may be due to the extension of an inflammatory process from the stomach, as in chronic ulcer eroding, or an acute ulcer perforating, into the pancreas.

The treatment of catarrhal inflammation of the pancreas and of chronic interstitial pancreatitis will at first be by general and medical means aiming at the cause, whether that be gall-stones, pancreatic calculi, duodenal catarrh, gastric ulcer, alcoholism, or syphilis; but if, after a fair trial of medical treatment, not too long continued, the jaundice and loss of weight continue, and the signs of failure in pancreatic digestion and metabolism are manifesting themselves, the question of surgical treatment should be seriously considered, for the condition is one that if not relieved early will certainly lead to serious degeneration of the gland. When operation is undertaken before the process has advanced to well-marked pancreatitis or to the interacinar form, my experience is that complete cure is effected in a very great proportion of cases; but if interstitial inflammation has become well marked, an arrest of the process is all that can be looked for. As proof of this statement, in some cases, apparently well several years after operation, a pancreatic reaction can be obtained in the urine, while in two cases glycosuria has developed, thus showing that inflammation of the pancreas, if at all advanced, leaves abiding changes, and the sooner the morbid process is checked, the less likelihood will there be of a permanently deficient metabolism. Surgical treatment will vary according to the cause and the symptoms. Where there is evidence of obstruction, whether in the pancreatic or common bile-ducts, the cause in the greater number of cases (27 as compared with 24) will prove to be concretions, which should if possible be removed; and the hope of relief is very promising.

Not only is it desirable to remove the cause of obstruction, but at the same time the bile-ducts should be drained, either by means of cholecystotomy or cholecystenterostomy. Where no obstruction in the shape of gall-stones or pancreatic calculi can be found, I would still advise drainage of the bile-ducts by one of these operations. It has been argued that it is difficult to comprehend how drainage

can do good in these cases; for proof of its efficacy I would appeal to the list of examples that I have given, and to the after-history of the cases which I have operated on. The drainage of the bile-ducts acts not only by removing one source of irritation in the shape of infected bile, but at the same time it relieves tension and allows the infected pancreatic secretion to escape, besides also freeing the blood from a poison which seriously damages it and the system at large. Besides the beneficial effects of drainage, in many of the cases the cause of obstruction is also removed. Whether advanced chronic interstitial pancreatitis will be completely cured by operation, it is difficult to say, for in some of the severer cases a pancreatic reaction is found long after operation and after all other symptoms have cleared up; but in several cases that have been tested years after operation, the pancreatic reaction has entirely disappeared, thus apparently proving that the case is cured. Moreover, I suspect that the operation arrests the process of disorganization even if it cannot alter changes that have already occurred. Doubtless, in some the disease was a catarrhal inflammation of the pancreas, which was arrested either before interstitial inflammation had actually developed or before it had advanced too far, and probably in none of the cases had the interstitial change advanced so far as to become interacinar or to present the advanced stage of atrophy or cirrhosis, as in none of them was sugar present in the urine at the time of operation; though the metabolic functions of the pancreas were impaired, as shown by the presence of the pancreatic reaction, and the digestive functions were affected, as shown by the condition of the fæces.

*Pancreatic Cysts.*—The surgery of cystic disease of the pancreas is much in advance of pancreatic surgery as a whole, and it is a subject on which all authorities are agreed as to the wisdom of simple drainage, which is usually sufficient to bring about relief or cure.

The symptoms produced by a pancreatic cyst vary according to the size and seat of the tumour. They are at first dependent on the disease leading to the cystic formation, and later, to the pressure exercised by the tumour on neighbouring viscera, so that we find digestive disturbance with loss of flesh and epigastric uneasiness, or some pain, quite early, these being followed in certain cases by very intense pain occurring in paroxysms, by vomiting, constipation, jaundice, and wasting, and later by the presence of a tumour. Fatty stools, azotorrhœa, bulky pale motions, and glycosuria will be present or absent, according to the amount of degeneration present in the gland. In all the cases I have observed recently, there has been a well-marked pancreatic reaction in the urine, indicating catarrh of the pancreatic ducts or interstitial inflammation, and if this test holds good for cystic disease of the pancreas generally, as I believe it does, it will, I think, form an important diagnostic sign in any case of tumour suspected to be pancreatic. In this connection it may be well to

remark that the most frequent cause of cyst development is chronic interstitial pancreatitis, in which compression and constriction of the ducts result from a new formation of connective tissue, with consequent stagnation of secretion. The different positions assumed by pancreatic cysts I have shown to be chiefly due to the anatomical relation of the pancreas, especially in regard to the peritoneal reflections.

*Injuries of the Pancreas.*—Von Mikulicz[2] has clearly demonstrated that injuries of the pancreas should be treated by laparotomy. Out of 45 cases of pancreatic injury collected by him, 24 were perforating, 12 were gunshot, and 9 stab wounds. Of the 12 gunshot injuries 5 were operated on, 3 recovering; the 7 not operated on all died. Of the 9 stab wounds all were operated on, and 8 of them recovered. Of the 24 subcutaneous injuries 13 were not operated on, and all died: of the 11 operated on 7 recovered. No hard-and-fast rule can be formulated as to the method of treatment; the injured part must be exposed, and either ligature of vessels or suture of surfaces adopted; but gauze, tampons, and drainage form important features in any of these operations, and where the peritoneum has been generally soiled with blood and pancreatic effusion, lavage with hot saline fluid affords the double advantage of relieving shock and cleansing the abdomen.

*Pancreatic Calculus.*—I believe that calculi never form in a healthy pancreas, and it seems highly probable that, like gall-stones, pancreatic concretions are the result of catarrh of the ducts with stagnation of secretion, which generally, if not always, results from infection. Instead of calculi being formed, the ducts may actually be lined with calcareous material, which may accumulate so much as to close completely, or almost completely, the lumen. A convenient term for this disease may be "pancreolithic catarrh." As a rule the calculi are numerous, and in only three known cases has a solitary calculus been found.

In my Hunterian lectures I showed that pancreatic calculi might be distinguished from gall-stones by the fact that the former, containing lime, are opaque to the X-rays, whereas the latter transmit them. Another diagnostic point mentioned was, that the pancreatic reaction can be obtained in the urine, seeing that pancreatic calculi are usually connected with some degree of interstitial pancreatitis. In the same lecture was also described the operation of pancreo-lithotomy, and a case was mentioned in which a calculus was removed from the middle of Wirsung's duct, one from Santorini's duct, and others from the duodenal orifice of the duct, with a successful result.

*On the Adaptation of the Pancreas.*—Bainbridge[3] says that the brilliant investigations of Pawlow and his pupils have greatly extended the range of physiological knowledge of the normal mechanism of gastric and pancreatic secretion. One of their most interesting discoveries has been the observation that the pancreas, like most

other organs of the body, possesses the power of adaptation to varying conditions, and that the composition of pancreatic juice is not constant, but can be modified by different diets, particularly with respect to the amounts of the enzymes which it contains. Pawlow's work has been dominated throughout by the conception that pancreatic secretion is controlled entirely by a nervous mechanism, whose efferent fibres run in the vagus, and whose afferent fibres have their origin in the duodenal mucous membrane. This view naturally led him to the supposition that the adaptation of the pancreas was also dependent on a nervous mechanism; and Pawlow holds that the intestinal mucosa contains nerve-endings which have a specific excitability, such that they react only to the stimulus of definite substances, and call forth a secretion of the pancreas in a specific fashion. Fat, for example, stimulates certain nerve-endings in the intestinal mucous membrane, thereby evoking the secretion of steapsin in large amount by the pancreas.

However, the recent work of Bayliss and Starling on secretion, has shown that pancreatic secretion does not depend upon a nervous reflex action, but is normally produced by a chemical substance—secretin—acting as a specific stimulus to the cells of the pancreas. The discovery of secretin has not merely rendered it possible to study the work of the pancreas without recourse to the production of a permanent fistula; it has proved that Pawlow's interpretation of his own results can no longer be accepted. Moreover, the fact that the normal mechanism of pancreatic secretion is chemical, naturally raises the question as to the nature of the adaptation of the pancreas to food, and throws doubt on the nervous theory maintained by Walther; the results of an investigation are embodied in the thesis by Dr. Bainbridge.

The majority of the observations on the adaptation of the pancreas have been made on the enzymes normally present in pancreatic juice, and considerable difficulties arise in the estimation of the amount of enzyme formed in response to different diets, since the amount of enzyme secreted varies inversely with the rate of secretion of juice, and the rate of secretion is different for each food stuff. For this and other reasons it was found more satisfactory to follow Weinland and work with lactase, which converts lactose into glactose and dextrose. This enzyme is absent from the pancreatic juice of adult dogs, though it is present in extracts of the pancreas of most young animals; consequently the mere appearance—even in small amount—of lactase in pancreatic juice, as the result of a diet containing lactose, furnishes conclusive evidence of adaptation on the part of the pancreas. Moreover, lactose has the advantage of being a normal article of food in early life, and can be readily added to or excluded from the diet of animals.

References.—[1]*Lancet*, March 19, 26, and April 2, 1904; [2]*Ann. Surg.*; [3]*Brit. Med. Jour.* April 2, 1904.

**PATELLA, Fracture of.** (*See* FRACTURE).

**PEMPHIGUS.** *Norman Walker, M.D.*

Ormerod[1] discussing the varieties of this condition, makes the remark that it is not really a common disease : bullæ (often mistaken for it) occurring in many eruptions. He defines it as " a disease in which without obvious cause and upon apparently healthy skin, an eruption arises which from first to last consists of bullæ." Even this he considers is not quite satisfactory, as it does not exclude cheiropompholyx. With reference to *pemphigus vulgaris* he emphasizes the fact that it is occasionally fatal, with nervous symptoms. A microbial origin can probably be ascribed to the acute pemphigus of the type seen amongst butchers.

Treatment, even with the recognized **Arsenic**, often fails, and then **Iron** and **Quinine** may be given. Pemphigus following vaccination, and *pemphigus neonatorum*, have probably also a bacterial origin. *Pemphigus foliaceus* is very rare. Congenital pemphigus or epidermolysis bullosa, consists in this, that the patient's skin is so delicately constituted that bullæ readily form on very slight irritation or injury, and these bullæ often contain blood.

*Pemphigus vegetans* is well described in a paper by Dyce Duckworth[2]. His case occurred in a gamekeeper, aged fifty-one, in whom the disease started 6½ months previously by a sore throat, and subsequent ulceration of tongue, cheeks and gums. Afterwards the eruption appeared as blisters on the feet and ankles, and gradually spread up the legs to the scrotum. The lesions were warty in character, and in places ulcerated, but all stages in pigmentation and induration were noticed, from slight redness, to deep bronzing of the skin with great thickening of its layers ; furthermore the glands were enlarged. Bacteriological examination revealed no infective elements. He thus records the progress of the eruption : " The elementary lesions were merely of a bullous character, chiefly papular, dusky red in colour, gradually enlarging, becoming coherent with others and coalescing into larger patches. These next became pigmented of a slate blue colour, and more or less raised and roughened. The adjacent uninvolved areas of skin became deeply pigmented of a brown colour." The general aspect of the patient at first suggested leprosy, but this view was soon discarded. No treatment was of any service, and the drugs included such as arsenic, thyroid extract, etc. ; eventually the case proved fatal.

Pernet[3] has obtained pure cultures of bacillus pyocyaneus from a case probably arising from sewage effluvium.

Eustis[4] examined bacteriologically the contents of the bullæ in one case of pemphigus vulgaris, and his conclusions were as follows : (1) In cases of pemphigus a diplococcus can be isolated from the contents of the bullæ ; (2) This diplococcus when injected intravenously into the rabbit will cause death ; (3) A diplococcus removed from the blood of such a rabbit and identical with that obtained from a case of

pemphigus vulgaris, when injected into the pig produces a pustular eruption attended with much constitutional disturbance; (4) **Arsenic** is the main remedy to be relied on.

Morley and Ransome[5] narrate a case of acute bullous eruption in a butcher, where the disease started a circinate scaly patch on the back of the forearm, and simulated ringworm, being accordingly treated by scrubbing with pure **Formalin** and subsequent application of **White Precipitate Ointment.** The eruption thereafter spread up the arms and all over the body in the form of papules, pustules, and bullæ. The contents of the bullæ on examination only revealed *staphylococcus albus.* The temperature only rose to 99·4°, and recovery was gradual and uninterrupted. An interesting discussion by Bowen[6] on the similarities between this disease and foot-and-mouth disease forms part of a paper by him on a case in a butcher. The patient developed bullæ all over and was very ill, the temperature rising to 103°, but afterwards gradually subsiding. Diplococci were obtained from the bullæ, but only staphylococci and streptococci from a lesion inside the nostril. There was an epidemic of foot-and-mouth disease present at the time, and almost certainly the infection was through a cut on the finger. The literature is fully discussed, especially with reference to Pernet's cases, which however were mostly fatal. There are many similarities between the two conditions: the nose and mouth are affected in both, the chief difference lying in the longer incubation period of pemphigus, and he concludes that the same virus, although attenuated, is the cause of the latter disease.

REFERENCES.—[1]*Clin. Jour.* July 8, 1903; [2]*Brit. Jour. Derm.* July, 1904; [3]*Brit. Med. Assoc.* July, 1904; [4]*Jour. Amer. Med.* April 16, 1904; [5]*Lancet* May 16, 1903; [6]*Jour. Cut. Dis.* June, 1904.

**PERICARDITIS.** *Prof. A. H. Carter, M.D., F.R.C.P.*

Lees[1] contributes a good practical paper on the treatment of *acute rheumatic carditis and pericarditis.* He has great confidence in the value of **Sodium Salicylate.** But it must be given in adequate doses: for an adult, 20 grs. with 40 grs. of **Sodium Bicarbonate,** every two hours during the day, and every four hours during the night; for a child of 6 to 10 years old, 10 grs. with 20 grs. of bicarbonate at the same intervals. Children bear the drug well. There need be no fear of any depressing action upon the heart. Any heart-weakness, or acute dilatation which may be present, is due to the effect of rheumatic toxin (probably formic acid produced by rheumatic cocci); and when the salicylate is combined with full doses of bicarbonate, more is to be gained under these circumstances by continuing the salicyl treatment than by stopping it. There is one dangerous symptom, however, which may arise, and its occurrence should lead to an immediate discontinuance of the salicylate. It is a marked deepening of the inspirations (apart from pericarditis), resembling the " air-hunger " of diabetic coma. It is probably due to an action on the respiratory centre by an

excess of acid. It is not likely to occur when sufficient bicarbonate is associated with the salicylate, as above suggested. If, for any other reason, the salicylate seems to disagree, it should only be suspended for a few hours, and then resumed again in smaller doses, till the patient becomes accustomed to the drug. Acute dilatation may occur, but in a less serious form than in diphtheria or influenza. It rarely, if ever, produces a fatal syncope ; but it may give rise to marked pallor, and obvious changes in the pulse. It may occur as late as two or three weeks after the onset, perhaps later.

Have we any means of directly diminishing inflammatory action by local applications ? Blisters are not desirable. **Leeches** are distinctly beneficial, and should preferably be applied over the lower anterior part of the right chest, below the nipple level. The persistent application of **Cold** over the heart, by means of ice-bags, is a powerful way of repressing cardiac inflammation, especially pericarditis. Two precautions are necessary : to get and keep the patient quite warm with hot bottles before and while the ice-bag is applied ; and to prevent the right auricle from becoming distended. In the normal heart, the right auricle gives dulness on percussion for one finger-breadth from the right edge of the sternum in the *fourth* interspace. Anything beyond this points to dilatation, and when present calls for withdrawal of blood. Leeches, applied as above directed, are often sufficient ; in a severe attack in a robust subject **Venesection** may be of great value, removing 4 to 8 oz. of blood. It may be well to follow this by hypodermic injections of **Strychnine**, ℥ij for an adult, ℥½ to 1 for a child. The injection may be repeated in three hours. The ice-bag should not be too heavy, and may be suspended if thought necessary, but it must be large enough to cover the whole precordia. It should be secured by a bandage to prevent slipping. It will require to be refilled about every hour and a half : and it is well to have a second ice-bag in use. With good nursing, it may be applied continuously for several days, but occasionally it may be wise to remove it for a few hours during the night, especially between midnight and 6 a.m. If the practitioner is in doubt as to whether it ought to be continued, he may remove it for one hour, and replace it for two hours.

*Traumatic Pericarditis.*—Two cases of pericarditis and one case of endocarditis are reported by Hall Pleasants[2] which resulted from severe contusion over the precordia, quite apart from any direct injury to the heart or its membranes by perforating wounds. Though a few similar cases have been previously recorded, the possibility of such an occurrence is not generally appreciated. There may or may not be associated fracture of a rib ; and, if fractured, it is not necessary that the fracture should be over the precordia. It appears even that the blow may be received in the back, and the heart be damaged by *contre coup* against the anterior thoracic wall.

*Purulent Pericarditis in Childhood.*—According to Dr. Coutts[3] the

frequency of purulent pericarditis in childhood is only appreciated by those who have special opportunities of witnessing necropsies in young children. That the complaint is usually first discovered on the *post-mortem* table is due to the large majority of cases being undiagnosable during life, owing to the scantiness of the pericardial effusion and the absence of all symptoms referable to it. Certain cases that might have been diagnosed during life, are missed because the condition of the patient has been too urgent to admit of any satisfactory or adequate examination. Other cases, again, go unrecognized owing to the reluctance to harass the child by having the dressings over an empyemic wound removed in order to examine the chest. The complaint, however, is so frequent in infants dying with empyemata that the possibility of its being discovered *post-mortem* should not be lost sight of, although there may never have been any recognizable signs of pericarditis during life.

REFERENCES.—[1]*Brit. Med. Jour.* Nov. 21, 1903; [2]*Johns Hop. Hosp. Bull.* May, 1903; [3]*Brit. Med. Jour.* Jan. 2, 1904.

**PERITONITIS.** *A. W. Mayo Robson, F.R.C.S.*

Blake[1] describes the treatment of the peritoneum in diffuse peritonitis. His remarks are based on 17 cases of spreading peritonitis and 15 cases of general peritonitis, treated by laparotomy and drainage. Large quantities of saline solution are used, and the peritoneal cavity is closed without drainage, unless the latter is absolutely indicated by the presence of non-absorbable amounts of necrotic material. Of the cases of spreading peritonitis, 13 recovered, while of the general peritonitis cases, 5 recovered.

Lund[2] has operated on 34 cases of general peritonitis, four-fifths of this number representing cases in which the greater peritoneal cavity was involved: of these 20 patients died, a mortality of 59 per cent.

Lorenz[3] records a case of peritonitis from an unusual cause. The patient, a boy aged three and a half, when first seen was obviously suffering from acute peritonitis. A diagnosis of appendicitis was made and operation performed. The abdominal muscles and preperitoneal tissue were œdematous, the latter being infiltrated with pus. The distended intestine bulged into the wound, and was covered with flaky lymph, but the appendix was normal, and no cause for the condition could be found. The boy died shortly afterwards. At the time of operation a small scab had been noticed on the little toe of the right foot. The autopsy revealed this excoriation to be the cause of death, for lymphadenitis had spread through the glands of the groin, one of which—deeply seated—was purulent, to the retroperitoneal glands, some of which had led to a general phlegmonous condition of the posterior abdominal wall with subsequent peritonitis. The staphylococcus pyogenes aureus was cultivated from all parts concerned.

Mr. C. A. Ballance, in a recent lecture, proposed to treat cases of diffuse infective peritonitis by means of immersion of the abdomen in a bath of saline fluid, the abdomen being opened and the intestines being allowed to float in the fluid. He had performed this operation on several cases, but thus far without success.

References.—[1]*Ann. Surg.* Aug. 1903; [2]*Rep. Boston City Hosp.* series 14; [3]*Wien. klin. Woch.* No. 14, 1904.

**PERTUSSIS.** *G. F. Still, M.D.*

Whooping cough, according to Root[1], is too often considered to be a trifling ailment, and people are sometimes foolish enough to court contagion, so that their child may "have it now and be done with it." Root shows by a series of statistics that the mortality from whooping cough is, in most places, considerably higher than that from scarlet fever; and states that the actual causes of death in whooping cough are pneumonia, bronchitis, marasmus from continual vomiting, cerebral apoplexy, external hæmorrhages, and subcutaneous emphysema. But apart from a fatal ending it has other dangers; it may leave the child with paralysis, epilepsy, or imbecility, and sometimes with visual defects or deafness. An instance of severe nervous complications is recorded by Fraser[2] in an infant, aged eighteen months, who during whooping cough was seized with convulsions, which left hemiplegia with hemianopsia and hemianæsthesia; whilst Foggie[3] reports a case in which, at the age of six months, severe convulsions, with coma, lasting two weeks, occurred during whooping cough, and when the infant recovered from the convulsions it was found to be affected with cerebral diplegia. Amongst the fatal diseases of children in England, whooping cough ranks third according to Robertson[4], who says that its complications and sequelæ are so numerous that it ought to be considered one of the most dangerous of infantile troubles. In the respiratory system, broncho-pneumonia, emphysema, pneumo-thorax, bronchiectasis, and phthisis are associated with it; one case of œdema glottidis and several of death attributed to spasmodic croup are also mentioned. In addition to the nervous complications already described above, rupture of the membrana tympani with profuse bleeding from the ear, subconjunctival hæmorrhage, transient loss of vision and strabismus occur, whilst in the digestive system, hæmatemesis, diarrhœa, and peritonitis may all prove serious. Dilatation of the heart is also a serious complication; albuminuria and glycosuria are sometimes found. Sometimes the occurrence of complications may be suspected wrongly, owing to the presence of fever during the paroxysmal stage of the disease. It is well known that there is commonly some pyrexia during the initial catarrhal stage of whooping cough, but in the later spasmodic stage, the temperature is generally said to be normal. Cæsaroni[5] records a case in which there was daily intermittent fever for eleven days at this stage, and Alfaro states that several varieties of pyrexia are met with during the paroxysmal period

of whooping cough: (1) Sudden short attacks of pyrexia, at irregular intervals; (2) Protracted remittent fever lasting throughout the whole of this period; (3) Protracted intermittent fever, usually quotidian, sometimes of tertian or irregular type; (4) Fever with a morning rise and evening remission.

The diagnosis of whooping cough sometimes presents a difficulty, inasmuch as it may depend entirely upon history; but Guida[6] suggests that in such cases a spoon-handle should be introduced into the mouth and pressed upon the base of the tongue so as to excite a paroxysm of cough, whereby its nature may be determined. A curious symptom, and one so constant in pertussis as to be of value in diagnosis, is the remarkably light colour and high specific gravity of the urine, according to Steckel[7].

The possibility of transmission of whooping cough by a third person has been disputed. J. L. Morse[8] made special enquiries, but from forty physicians of wide experience could only obtain very few instances of such indirect contagion; the cases reported, although few, seemed to justify the conclusion that whooping cough may be carried by a third person, and by clothing or other articles, but that such a mode of transmission is very exceptional.

Treatment.—The drug perhaps most universally in favour for the treatment of whooping cough is **Belladonna.** Tresilian[9], however, points out that it is by no means always successful. Steckel (*loc. cit.*) says that **Euquinine** is particularly valuable in this disease, always shortening its duration, and frequently aborting it if given before the second week. To infants he gives euquinine, in suppositories containing 3 grs. of the drug; it does not cause rectal irritation. For older children, it may be given by mouth in doses varying up to 8 grs., or if used as suppository, in doses of 15 grs. If the paroxysmal stage has already commenced, small doses of **Codeine** should also be given by mouth. Steckel's cases were all cured within three weeks, and most of them in two weeks.

Confirmatory evidence of the value of euquinine is given by Kraus[10], who says that this drug being tasteless, is taken readily by children, and that it appears to reduce the number of paroxysms of whooping cough, and to shorten the course of the disease. He has given it in doses of 5 to 8 grs. per diem; occasionally, however, the dose was increased to 16 grs. It may be continued for weeks without any ill-effect.

Koplik, in his recent work on diseases of children[11], states that **Inhalations** of 20 per cent **Nitrous Oxide** with 80 per cent **Oxygen** are useful where the heart is weak. The gas is inhaled from a cone, for ten minutes twice daily. The same writer recommends full doses of **Antipyrine with Digitalis**; 1 to 2 minims of digitalis, and of antipyrine 1 grain for each year of the child's age up to 5 grains. **Bromoform**, which has been recommended by many writers, he considers dangerous and of questionable utility. He also recommends **Phenocoll**, which

he has used in combination with heroin. **Antipertussis Serum** is still on trial. Jacques[12] has used it in 28 cases with favourable results in most of them. He believes that it has a real curative effect; the attacks diminished in number and intensity after the injections. In cases treated early, the disease was cured in 10 to 15 days. In cases which proved more obstinate a second injection was given of 5 to 10 cc. according to the age of the child. The only unpleasant effect noticed was urticaria in 5 out of 28 cases. Vargas[13] also has met with favourable results from the use of Leuriaux's serum, but considers that further observation is necessary before pronouncing in its favour. **Mechanical Support** has been recommended by Kilmer[14], who devised a belt which envelopes the child's thorax or abdomen, or both, with shoulder straps to prevent it slipping down. This support seemed to relieve the vomiting greatly, and actually to render the paroxysms of whooping less severe.

REFERENCES.—[1]*Pediatr.* Feb. 1904; [2]*Brit. Med. Jour.*; *Arch. Ped.* Aug. 1904; [3]*Scot. Med. Jour.*; *Ann. Méd. et Chir. Inf.* Aug. 1, 1903; [4]*Scot. Med. and Surg. Jour.*; *Arch. Ped.* Oct. 1903; [5]*Rif. Med.*; *Arch. Ped.* April, 1904; [6]*Arch. Ped.* Jan. 1904; [7]*Klin. Ther. Woch.*; *Ther. Gaz.* Sept. 15, 1903; [8]*Med. Rec.* Oct. 10, 1903; [9]*Med. Press*; *Ther. Gaz.* July 15, 1904; [10]*Allg. Wien. Med. Ztg.*; [11]*Dis. of Inf. and Child.* 1903; [12]*Ann. Méd. et Chir. Inf.* July 15, 1904; [13]*Ibid*, April 1, 1904; [14]*Med. Press*, July 15, 1903.

**PHAGEDÆNA (Tropical).** *J. W. W. Stephens, M.D.*

Known according to locality as Mozambique, Yemen, Madagascar (malgache), Annamite ulcer, the application of this name to various ulcers by various observers differs. Regnault[1] defines it as follows: (1) A papule developing into a vesicle surrounded by inflammatory redness; (2) A sero-purulent bleb follows; (3) This on breaking exposes a small, moist, grey slough; (4) The slough extends in width and depth, it softens in the centre and liquifies; (5) The process extends, so that all the tissues may be involved, and eventually the bone; (6) The region around the sloughing ulcer is much swollen. It is inoculable from one leg to another by contact.

TREATMENT.—Regnault employs a 2 per cent aqueous solution of **Chloral Hydrate.** The solution is applied hot with absorbent cotton wool.

REFERENCE.—[1]*Arch. Gén. de Méd.* 1904, p. 2268.

**PHTHISIS.** *W. J. Hadley, M.D., F.R.C.S., F.R.C.P.*

ETIOLOGY AND PATHOLOGY.—Moeller and Rappoport[1] point out the importance of the condition of the air-passages, as predisposing to phthisis. Especially is this so in disease of the naso-pharynx, in which the functions of filtering and moistening the air going to the lungs are lost. In support they show the very high percentage of some disease of the upper air-passages occurring in cases of pulmonary phthisis.

Prof. von Behring[2] strongly upholds the identity of human and

bovine tuberculosis. He does not admit the occurrence of inhalation tuberculosis, but claims that nearly all cases are acquired in infancy, through the gastro-intestinal tract. He says that tubercle bacilli readily pass between the cells of the undeveloped mucous membrane of the intestines of infants ; and that in this way, sucking children become infected with tubercle, which remains latent till puberty, childbirth, lactation, malnutrition, or unhygienic surroundings may kindle it at some subsequent period in their lives.

Prof. Hueppe[3] thinks infection may occur by the lungs, lymphatics, tonsils, or intestines, according to special susceptibility of the individual. He believes in an inherited predisposition, and agrees with von Behring as to the permeability of the infantile intestine, pointing out the consequent importance, as a preventive measure, of ensuring a pure milk supply. Bearing upon this point Davies[4] draws attention to the great diminution in the number of cases of abdominal tuberculosis and tabes mesenterica during the last ten years, which he ascribes to the elimination of milch cows with tuberculous udders, and to the increasing practice of sterilizing milk before consumption. It is obvious that, if we are to believe von Behring, this decrease in abdominal tuberculosis *now*, will be attended by a diminution in all forms of tuberculosis *later on*.

Much work is still being done with a view to deciding as to the identity, or not, of human and bovine tuberculosis. An excellent summary of the results is given by Prof. D. J. Hamilton[5] as follows :—

1. That although human tubercle is probably not so virulent for the calf as that derived from bovines, yet it can be readily inoculated upon that animal.

2. That this holds good whether the tubercle inoculated be derived from tubercular lymph glands, lung, sputum, or urine.

3. That it produces this positive result irrespective of whether it be introduced by feeding the animal with tubercular material, by subcutaneous inoculation upon a peripheral part, by respiring a spray containing the bacillus, or by injection into the venous system.

4. That the organs most affected are those in immediate connection with the part operated upon.

5. That the lymphatic system is constantly involved in the resulting tuberculosis.

6. That when administered by the mouth, tubercular sputum induces an abdominal lymph gland tuberculosis without the intestine being necessarily involved.

7. When human tuberculosis has been ingrafted upon a calf, it gains enormously in virulence by being re-inoculated upon a second calf.

8. The morphological characters of the bacillus may vary according to circumstances, and are no guide to the source of the organism.

9. The above facts go to show that the human and bovine bacillus are identical, but modified somewhat by their environment.

10. That the results thus obtained are a direct contradiction of those alleged to have been obtained by Koch and Schütz.

Allan MacFadyen[6], experimenting with monkeys, also came to the following conclusions :—

1. Monkeys are susceptible to both forms (human and bovine) whether conveyed by inoculation or feeding.

2. A certain number died (apparently of some form of intoxication) in from two to ten days.

3. The others succumbed to general tuberculosis in from one to two months, whether bovine or human had been used.

4. A striking difference was noticed in the intestinal tracts of those fed with tubercular material ; *viz.* : those bovine-fed had no intestinal lesions ; those fed with human material had invariably intestinal lesions. Both had general tuberculosis, showing that the bovine form can pass through the intestine without leaving any lesion, and thereby accounting for the frequent presence of tabes mesenterica without any intestinal lesion ; also possibly explaining the comparative frequency of tuberculous enteritis as a sequel to pulmonary tuberculosis from swallowed sputa.

Diagnosis.—The importance of early diagnosis becomes greater, as it is increasingly shown that the success of treatment largely depends on the stage at which it is begun. As a means to this end we have some authorities upholding the use of **Tuberculin.** Thus Hammer[7] says : (1) The method is very accurate, giving 91 per cent positive reactions ; (2) There are dangers, such as : (*a*) exaggeration of any existing nephritis. (*b*) cardiac failure (3 deaths reported). (*c*) dyspnœa (laryngeal, tubercle and lupus especially), (*d*) Fever and hæmoptysis, and fresh extension of the lung disease, (*e*) gangrene at the seat of injection. All these dangers are greater where the disease is advanced, but they show that great care is necessary, and may lead to the abandonment of the measure, valuable as it has undoubtedly proved itself to be. Schüle[8], on the other hand, quotes several cases where bad symptoms arose, one of acute miliary tuberculosis, and gives one case where undoubted tubercle gave a negative result.

Others rely for early diagnosis on the **Temperature.** Schüle (*op. cit.*), having given up tuberculin, relies entirely for the diagnosis on the difference, before and after exercise, in the rectal temperature. Penzoldt[9] uses the same means. There is some difference of opinion as to whether temperatures should be taken in the mouth or rectum. On this point, Kelynack and Williams[10], from a series of careful observations, come to the conclusion that for practical purposes, in the management of phthisical cases undergoing so-called sanatorium treatment, the registration of temperature by the oral method, when taken during rest and with due care, affords reliable guidance.

In speaking of the use of the **X-rays** as a means of diagnosis, Brook and Green[11], after saying that the points necessary in this procedure

are: (*a*) Maximum and minimum positions of the diaphragm; (*b*) Translucency of the apices; (*c*) Position, size, and mobility of the heart, come to the following conclusions:—

1. In no single case in which physical signs were present did the X-rays fail to detect mischief.

2. In some cases where physical signs were absent, the rays showed deposits, and subsequently physical signs appeared.

3. The rays frequently demonstrated that the disease was more extensive than the physical signs indicated.

4. The radiograms obtained enabled the progress of the cases to be more accurately watched. They, however, allow that chalky deposits, old cavities, thickened pleura, and localized abscess may lead to fallacies.

Discussing early diagnosis in an interesting paper, Clarke[12] summarizes his conclusions as follows: (1) An increased pulse rate; (2) Gradual loss of weight and strength without obvious cause; (3) An evening rise of temperature; (4) Digestive disturbances, which are often present early and should be inquired into more carefully; (5) The finding of numerous tubercle bacilli in the sputum; (6) The broncho-vesicular, or probably better, as some authors term it, the vesiculo-bronchial breathing; (7) The small crepitant râles heard at the end of inspiration; (8) The necessity of repeated physical examinations in order that we may reach definite conclusions; (9) The importance of keeping a daily record of the pulse and temperature.

Treatment.—**Immunity.**—Trudeau[13] and von Behring[14] have succeeded in conferring immunity, the former on guinea-pigs and rabbits, and the latter on cattle, by inoculating or feeding them upon cultures of living human tubercle bacilli, attenuated by cultivation on artificial media. These results have not been verified on human beings, but von Behring thinks that a parallel might be found. Reviewing the whole question, Trudeau (*op. cit.*) gives some of the points which still need elucidation on this great question as follows:—

1. The dangers of conferring immunity.

2. The duration the immunity is likely to have.

3. Whether the living germ is necessary to confer immunity.

4. Whether immunity can be strengthened by toxins from the bacilli, or by the serum of immunized animals.

5. Whether milk of immunized cows will be protective.

6. Whether the serum of immunized animals will protect against, or influence the course of, disease in tubercular patients.

Much work is being done on this subject, and many other methods of attempting to produce immunity have been used besides the one mentioned above. For instance, Figari[15] reports having been successful in producing partial immunity by feeding guinea-pigs on the dried blood of immunized calves. Maragliano[16] also claims success from the production of a localized tubercular lesion of the skin,

and Marmorek[17] and Beraneck[18] have each elaborated a **Special Serum** for which they claim immunizing powers.

Lastly, Mahers[19] claims to have found an **Anti-tuberculous Bacillus** in tuberculous milk, and that pure living cultures of this organism can be injected subcutaneously without harm into human beings, and that, in many cases, great benefit has resulted from its use.

At present, however, all that can be said is, that it is possible to confer a certain amount of immunity on some animals, but the questions given above still remain to be answered, and the work on the subject is still too immature for any definite opinion to be given.

**Antiseptics** are still largely used. Moorhead[20] advocates the method, used by Colin Campbell (reviewed last year), of intra-tracheal injections of medicinal **Izal and Glycerin.** The treatment does not aim at killing the organism, but preventing its rapid growth and development, and, what seems more important still, would have the effect of destroying many bacilli in the bronchial secretion, which were in the process of being expectorated, and in that way would lessen their powers of re-infecting the patient and of transmitting the disease to others.

Muthu[21] uses **Formaldehyde** either by (1) Inhalation, (2) Intra-venous injection, or (3) Crabbe's method of introduction through the skin by means of currents of static electricity. For inhalation he uses formaldehyde (40 per cent) 1 part, chloroform 1 part, rectified spirit 2 parts, to be used on a sponge respirator. For venous injection he uses 50 cc. of 1–2000 up to 50 cc. of 1–1000. He has seen absolutely no ill effects, and feels strongly that such treatment hastens the arresting process, and so materially shortens the time necessary for any individual patient to stay in a sanatorium.

Dewar[22] speaks highly of the intra-venous injection of **Iodoform.** He dissolves it in ether, using a nearly saturated solution, and injects 5 or 7 up to 40 minims daily. It is better to use a different vein daily. Occasionally momentary unconsciousness, or severe dyspnœa and palpitation, or occlusion of the vein was produced ; but he reports very beneficial results so far as the pulmonary lesion was concerned.

The present reviewer has given these treatments rather fully, because he feels that sanatorium treatment is practically only available for early and well-to-do cases, and that the treatment of others is apt to degenerate into mere routine, symptomatic treatment. All these antiseptic treatments are applicable in people who are *going about their business*, as well as helpful in sanatorium treatment, and it is, therefore, important to get wider knowledge as to their true value.

**Radio-active Emanations.** — We recognize the importance of this treatment in a general way, by strongly advocating exposure to light and sun. Freudenthal (*op. cit.*) thinks electric light is beneficial as a substitute in towns. The X-rays and ultra violet rays have been used by many. They seem undoubtedly beneficial in cases of superficial

tuberculosis, but there are not enough instances of their employment in deep-seated (pulmonary) lesions to warrant an opinion as to their worth. Ransom[23] believes they do good, but cautions us against their use in hæmorrhagic cases; as, although the precise action on the tissues is not known, it is certainly attended by an increased vascularity, and he had induced hæmoptysis by their use in three cases.

Emanations from **Radium** and **Thorium**, obtained by inhaling air drawn through solutions of these substances, have been recently used in the treatment of phthisis[24]. It is too early to judge as to the possibilities of this treatment; but Sharp[25] has reported improvement in two cases treated by inhalations through a solution of **Thorium Nitrate.**

**$CO_2$ Treatment.**—Hugo Weber[26] says that $CO_2$ is not merely a terminal product of metabolism, but has important preserving functions, and strongly believes in an antagonism between it and phthisis. As reasons he draws attention to the following: (1) Patients suffering from emphysema and morbus cordis are not liable to phthisis, because their lungs are charged with $CO_2$, except in the cases of congenital pulmonary stenosis, where venous blood has a difficulty in getting into the lungs, and the patients nearly always die of acute or chronic tuberculosis; (2) Pregnant women often arrest their phthisis for the time, because the fœtus keeps the mother's blood rich in $CO_2$; (3) In 99 per cent of cases phthisis attacks the *apices*, because of the rapid escape of venous blood ($CO_2$) from these parts of the lungs: (4) In diabetics large amounts of sugar are given off as such, instead of being broken up into $CO_2$ and $H_2O$, and many such cases die of phthisis. He gives **Grape Sugar** in cases of phthisis, than which, he claims, there is no more potent $CO_2$ producer, and finds such treatment will arrest early cases. If no improvement takes place, he gives injections (well beneath the skin) of **Paraffin** or **Vaselin**, which is changed into $CO_2$ and $H_2O$ in the body.

What truth there may be in this contention remains to be proved; but it may be pointed out that out-door living, exercise, and super-alimentation certainly increase the elimination of $CO_2$ by the lungs. It would be interesting in this connection, to know what the incidence of phthisis is amongst those working in soda water manufactories, where the air is continuously very rich in $CO_2$.

**Open Air.**—So well is sanatorium treatment recognized now, that there is but little to say under this heading. Burton-Fanning,[27] in a valuable analysis of the results obtained at Mundesley, gives figures which agree very much with those quoted from Rushton Parker in last year's *Annual*. These results abundantly prove the value of this method of treatment, but, as Chidell[28] says, it is impossible to make proper use of any of these statistics, because no general classification is adopted. Not only is comparison rendered most unreliable, but the figures cannot be used for help in prognosis, as would be possible if some such simple classification as Turban's were in general use. The

present reviewer quite agrees as to the importance of this criticism, and urges the adoption of Turban's classification, as follows :—

*Stage I.*—Slight affection of not more than one lobe, or two half lobes.

*Stage II.*—Slight affection of not more than two lobes, or severe affection of not more than one lobe.

*Stage III.*—All beyond Stage 2.

Further, it is necessary to come to a general understanding as to what is meant by "cured" and "arrested." Chidell (*op. cit.*) suggests that "arrested" might be defined as "fit for work, with absence of fever and active disease." "Cured," he would define as "a condition of arrest maintained for two years." As an illustration of this classification, the following table quoted in Chidell's paper may be referred to. Such figures are most encouraging, and emphasize most strongly the importance of early diagnosis.

*Table of results in percentages of 341 cases treated by Dr. Rumpf, at Frederichstein, in 1900, up to date, i.e., two or three years after discharge.*

| Stage. | Able to work. | Unable to work or receiving aid. | Dead. | Treatment repeated. | Unknown. | Total. |
|---|---|---|---|---|---|---|
| I. | 75·6 | 6·8 | 3·4 | 11·5 | 2·7 | = 100 |
| II. | 62·4 | 9·2 | 12·8 | 12·8 | 2·8 | = 100 |
| III. | 25·4 | 14·7 | 54·8 | 4·0 | 1·1 | = 100 |

NOTE.—The results are really more favourable than the figures show, because when treatment was repeated there was often no relapse; because of the unknown cases many may be able to work; and because several of the "dead" died from other causes (*viz.*, one of suicide).

*Dispensary Treatment.*—Miller[29] advocates the establishment of special dispensaries for those cases which cannot have treatment at hospitals or at sanatoria. He gives, as the object of these institutions: (1) To educate and treat the patient; (2) To educate the friends; (3) To discover early cases. So important is it to cater for the large numbers of consumptives who go about their work, but who are nevertheless infective, that a brief summary of the management suggested by him is warranted. The dispensary consists of an out-patient department attended by doctors, and a staff of specially trained nurses. The doctors work on these lines :—

1. Inform the patient of his disease.

2. Carefully explain its infective nature, emphasizing the fact that danger can be avoided with care (to avoid phthisiophobia). Printed circulars of information and pocket spittoons are supplied.

3. The circumstances of the case are gone into, so as to help in the

matter of arranging the best way for the patient to get the largest amount of rest, fresh air, and food ; help being often given in the matter of food, or by obtaining lighter work for the patient.

4. The trained nurses follow them to their homes, practically demonstrate the information given, see if any others of the family or friends show any signs of similar affection (early diagnosis) so as to obtain their earliest attendance at the dispensary.

Miller reports most encouraging results in the actual cases treated (while still at work), whilst the benefit of this educational force to the whole community, as regards prevention, is obvious.

### Dietetic Treatment of Consumptives.

*Otto Walther, M.D.*

Sanatorium treatment has been associated with "forced dieting," the general belief being that the stuffing process is an essential part of the cure. It is important, therefore, to observe that indiscriminate forced feeding should not be the aim, but that the diet should be adapted in accordance with the condition of the individual patient.

It is impossible to say how much food should be given to each patient ; the amount can only be determined by a consideration of his actual state. On account of some complication, some may require a low diet, even milk alone, gradually increasing to a larger diet ; and others, for some special reason, may not be able to take milk, and this must be made up by some other form of food. The same applies to other articles of diet.

A large irregular weekly weight gain is not so desirable as a small regular one, say half a pound to one pound a week ; therefore, generally speaking the amount of food given to each patient is in proportion to his weight gain.

The opinion that forced feeding causes a dilated stomach, can only be applied to that treatment where the importance of exercise is not appreciated. A dilated stomach must usually be associated with a generally flabby condition, and both conditions can as a rule be usually avoided, not by a diminution of the diet, but by regulated exercise ; and this in turn must be planned with due regard to temperature and conditions.

As to the quality of the food, anything may be given, but it must be of the *best*, and well served. Patients must be encouraged, not forced, to eat everything ; and at Nordrach-Colonie the most important articles of diet, such as vegetables, potatoes, bread and butter, are helped by the patients themselves, they being credited with the sense to know that they have come to the sanatorium to get well, and it being pointed out to them that in the majority of cases, the cure depends as much upon themselves as the doctor.

At Nordrach-Colonie there are three meals a day, as follows :—

*Breakfast* (8 a.m.) Consisting of cold meats, or a hot course, one

pint of milk (according to weight gain), bread (brown and white). butter, biscuits, and jam.

*Dinner* (1 p.m.) Two hot courses of either meat, fowl, or fish, with vegetables, and one pudding course or fruit course ; one pint of milk, beer, or light wine.

*Supper* (7 p.m.) One hot meat course, with vegetables, and one cold course with bread and butter ; milk (one pint), light wine, or beer. Soup for second course is given occasionally.

Patients have one hour's rest before meals, *i.e.*, 12 to 1 p.m.. and 6 to 7 p.m.

To sum up, the treatment must not be one of universal forced feeding, but should be dictated by common-sense in relation to the individual patient. In cases of fever, hæmoptysis, and other complications, the diet must of course be altered to meet the condition. With a few exceptions the ordinary diet is adhered to.

REFERENCES.—[1]*Zeits. f. Tuberk. u. Heilk.* July, 1903 ; [2]*Brit. Med. Jour.* Oct. 17, 1903 ; [3]*Med. Rec.* Nov. 28, 1903 ; [4]*Lancet*, Sept. 12, 1903 ; [5]*Quart. Med. Jour.* Aug. 1903 ; [6]*Lancet*, Sept. 12, 1903 ; [7]*Beitr. f. klin. der Tuberk.* Band i, Hft 4 ; [8]*Ibid*, Band ii, Hft 1 ; [9]*Norsk. Mag. f. Laegevidence* ; [10]*Brit. Med. Jour.* Oct. 24, 1903 ; [11]*Quart. Med. Jour.* Aug. 1903 ; [12]*Med. Rec.* Jan. 9, 1904 ; [13]*New York Med. Jour.* July 18, 1903 ; [14]*Brit. Med. Jour.* Oct. 1903 ; [15]*Berl. klin. Woch.* Jan. 18, 1903 ; [16]*Rev. Med. Cir. Pract.* June 7–14, 1903 ; [17]*Brit. Med. Jour.* Mar. 26, 1904 ; [18]*Lancet*, Jan. 16, 1904 ; [19]*New York Med. Jour.* Jan. 2, 1904 ; [20]*Dub. W. Med. Soc.* Jan. 1904 ; [21]*Brit. Med. Jour.* Oct. 24, 1903 ; [22]*Ibid*, Nov. 21, 1903 ; [23]*Med. Rec.* Feb. 27, 1904 ; [24]*Brit. Med. Jour.* July 27, 1903 ; [25]*Ibid*. Mar. 19, 1904 ; [26]*Zeits. f. Tuberk. u. Heilk.* Aug. 1903 ; [27]*Lancet*, Aug. 15, 1903 ; [28]*Pract.* Dec. 1903 ; [29]*Med. Rec.* Aug. 22, 1903.

**PIROPLASMOSIS HOMINIS.** *Wm. M. Chowning, M.D., Minneapolis.*

This disease, also known as "spotted fever," "tick fever," and "blue disease," has been for thirty years recognized by physicians in the mountainous portions of Montana, Idaho Nevada, and Wyoming, in the Rocky Mountain division of the United States. It was first described clinically by Maxey in 1899. For some years it was confounded with mountain fever and black measles. In 1902 and 1903 the disease was investigated and studied by Chowning and Wilson, and in 1904 by Chowning ; in 1903 it was also studied by Anderson, and in 1904 by Stiles.

The occurrence of the disease is in the spring and summer months ; 90 per cent of all cases in April, May, and June, and 10 per cent in the latter part of March and the early part of July. Thirty-two per cent of all cases occur during the month of May. Sex and age bear little relationship to the number and severity of cases, adult males from thirty to forty years of age showing a slightly higher percentage. This can be accounted for by the fact that this portion of the population in a farming, mining, and lumbering country is most subjected to exposure in those localities where the disease exists.

Two types of the disease are seen. In Idaho, Nevada, and Wyoming the disease is rarely fatal, and is marked, almost uniformly, by the

absence of the eruption and the extreme mildness of the symptoms. In Montana the severe type, in which the death-rate is from 70 to 80 per cent, is the one usually met with. With this type, the onset is sudden, and is accompanied by chills, head- and back-ache, and fever ranging from 101° to 107° F. These symptoms are followed on the second or third day by the eruption, which begins on the wrists and ankles as discrete, rose-coloured macules. There is marked weakness and restlessness, soreness of muscles, and constipation of varied degree. The temperature gradually rises, the macular rash spreads over the whole body, head- and back-ache disappear to a marked extent, and the patient lapses into a condition of extreme listlessness and diffidence, with periods of irritability. Constipation continues, the macular rash becomes petechial, and later confluent, in the great majority of cases. In some I have seen quite marked nervous symptoms, such as photophobia, slight retraction, and carphology. Kernig's sign is uniformly absent. The tongue becomes thickly coated at the outset, and continues so throughout the illness. The temperature continues to rise ; the distressing weakness continues ; respiration and pulse-rate increase, without, however, any marked relation to each other or to the temperature ; the body may become marbled in appearance ; œdema of the face, hands, and feet may be so marked as to disguise the features several hours before death. The pulse at the outset full, regular, but quite rapid, becomes still more rapid, thready, and easily compressible.

The crisis is reached on the seventh or eighth day. At this stage the temperature may be 107° F., pulse 150, respiration 60 ; the patient is comatose. Death may now result, or the fever fall by lysis, and the long period of convalescence begin. Gangrene of the lobes of the ears, finger-tips, elbows, labia, scrotum, or knees may be encountered in severe cases, early in the course of the disease. Particularly in women and children a peculiar ashy pallor is noted. The urine is found in some instances to contain albumin, with granular and blood casts.

In cases which recover, an imperfect desquamation begins about the fifteenth day, following a gradual fading of the eruption. But even after desquamation, for several weeks, and even months, the splotched skin may persist. The blood, which is darker than normal, shows a decrease in red blood cells and a slight increase in leucocytes, although the data are insufficient to give any great value to this latter count. Hæmoglobin falls with the red blood cell count. The lowest recorded counts are as follows : R.B.C., 3,408,000 ; Hgb., 50 per cent– both in fatal cases. The highest W.B.C. count is 14,000, also in a fatal case. It must be noted here that these estimates were made at an elevation of 3500 feet.

Prognosis is bad in the severe type of the disease ; 75 per cent was the mortality rate in 118 undoubted cases. Death usually occurs between the sixth and eleventh days.

Treatment.—Medication has thus far availed little. At the present time **Quinine** in very large doses seems to be the best treatment, but it has not been used sufficiently to establish valuable data.

Morbid Anatomy.—The most important gross finding is the marked enlargement of the spleen. This organ may be from three to five times its normal weight. All organs and tissues show more or less congestion. The liver is markedly fatty.

Etiology.—The etiology of tick fever had never been the subject of investigation until 1902, when Chowning and Wilson first demonstrated, in the blood of their cases, a hæmatozoon possessing slow amœboid movement, which they named *Piroplasma hominis*, in conformity to a classification made by Laveran. There is little doubt that this organism belongs in the same group with *Piroplasma canis*, *Piroplasma ovis*, and *Piroplasma bigeminum*.

The fact that *Piroplasma hominis* resembles closely, in its form and in the symptoms it produces, the three members of the group above mentioned; that man is a victim of the disease only during that part of the year when the tick is active; and that practically all of the cases investigated, and all of the cases observed by both Chowning and Wilson, gave a definite history of having been, a short time prior to illness, bitten by ticks, led to the hypothesis that the disease is conveyed to man through the bite of some one at least of the numerous varieties of ticks which infest the area over which the disease is known.

This theory has however not been proved, and Stiles, in a recent report to the U.S. Government, has attacked the hypothesis. But inasmuch as he has failed to go further in his zoological experiments than Wilson and Chowning had previously done, his criticism carries little weight. Since Stiles represents the U.S. Government in the investigation of the disease, a quotation from his report should be given here: "The tick theory has caused serious financial loss to the Bitter Root Valley (Montana, U.S.A.), and has produced an effect which in a few cases bordered on hysteria. In justice to the property interests of the Valley and the peace of mind of the inhabitants, I think no time should be lost in publishing the statement that the results of study this year (1904) absolutely and totally fail to confirm the hypothesis." In his work he failed to carry on experimental inoculation of animals by the tick, to say nothing of the crucial test, namely, the similar inoculation of the human being. The same writer says, "In five of the ten cases examined, I was unable to establish a history of tick-bite." In one of the five cases mentioned, the undertaker, later on, spent some time in removing ticks from the scalp; in another, the perineal region was not examined; and in still another, the examination was entrusted to a sister at the hospital. Taking into consideration the technique employed by Stiles in arriving at the conclusions upon which he bases his criticism,

I consider that the hypothesis still stands as a good working theory, and that the problem offers a fruitful field for research.

The life-cycle of *Piroplasma hominis* is not definitely known. The youngest stage is probably represented by the coccoid and diplococcoid forms (*Plate XXIX, Figs. A, B, G, H, K*). These are seen in the plasma, and also in the red blood cells. At this stage the organism may possess a flagellum (*Fig. C*), and is often motile. *Figs. L, M* show the ring form which may exist singly, or doubly, or in triplets. In the coccoid and diplococcoid forms, the nucleus is very indistinct; and in the ring form, in the thickened portion of the ring only a few deeply-staining granules give any evidence of the presence of a nucleus. The coccoid forms later show a marked separation of the nuclear from the remaining elements. The rings are shown in a more advanced stage in *Figs. N* and *O*, the latter figure showing the formation of a heavy mass on the opposite side of the ring, with chromatin threads lying in the interval. Both the coccoid and the ring forms are apparently non-motile. In *Figs. P* and *Q* are shown the amœboid forms, the body of the organism taking the light Borrell blue, and the granular element taking the carbol thionin of the Nocard stain. At this stage the granular elements are distributed to the periphery of the organism. *Fig. R* shows a form very like *Fig. D*, except that it is intracellular. The location of these forms in the cycle is unknown, as is also the form shown in *Fig. E*. In *Figs. S* and *T* the organism is in what I believe to be its last two stages within the blood cell. In *Fig. S* the granular elements are at the periphery of the organism in a quiet stage. These granules are quite regularly distributed, and *Fig. T* shows the granules which have become markedly coccoid in form, still more regularly distributed, and with quite deeply-staining filaments running toward the centre of the organism. The cell body of the organism is in this figure indiscernible. *Fig. U* shows what appears to be the same stage as *Fig. B*. The former was found in the spinal fluid of a case which showed marked nervous symptoms, and in which the fluid drawn at one sitting measured about 2½ fluid ounces. The similarity of this form to that shown in *Fig. B* is striking, the latter being found in the blood plasma.

**PLAGUE.** *J. W. W. Stephens, M.D.*

Hunter[1], Government Bacteriologist at Hong-kong, has published a long and important account of his researches into plague. He draws attention to some of the early symptoms, which he considers are frequently overlooked, but which are of great importance in arriving at an early diagnosis. Among these he mentions: (1) That all cases of plague show an early and extreme cardiac weakness. The heart-beat is quickened, the pulse dicrotic, and becoming, towards the close of life, thread-like; (2) Intense headache, with a feeling of giddiness, is one of the earliest symptoms. This is usually accompanied by

PLATE 29.

# PIROPLASMA HOMINIS.

FIG. A.

FIG. B.

FIG. C.

FIG. D.

FIG. E.

FIG. F.

FIG. U.

FIG. G.

FIG. H.

FIG. K.

FIG. L.

FIG. M.

FIG. N.

FIG. O.

FIG. P.

FIG. Q.

FIG. R.

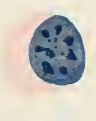

FIG. S.

FIG. T.



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persistent vomiting. The patient appears as if intoxicated; (3) The speech is characteristic, the conjunctivæ are injected, and there is often photophobia; (4) An early symptom, regarded by Hunter as commonly overlooked, is disturbance of the *gastro-intestinal tract* by diarrhœa and vomiting. Sometimes these are the only early symptoms, or there may be headache and a feeling of sleepiness; (5) An early diagnosis can often be made by a microscopical examination of the blood. For this purpose thick films are used, *i.e.*, the blood is spread out thickly over an area of the slide which would be covered by a sixpence. The blood is dried, and then, without fixing it, is placed in water or dilute acetic acid. The slide is subsequently stained. The finding of oval bacilli in considerable numbers, showing bipolar staining and which are decolorized by Gram's stain, is taken to be diagnostic. The author himself admits that great care should be exercised in the preparation of these films, but does not explain what is meant by "great care." It seems to us that the value of the statements made regarding the frequent finding of bacilli in the blood of plague patients is discounted by the fact, that no mention is made of any control observations having been made on other patients, or on people not suspected of having plague. The finding of bacilli in ordinary blood films in the tropics is no uncommon event, and bacilli with bipolar staining are found among them. That these results must be received with caution is evident from the result of the examination of mosquitoes and flies, recounted in a later part of the report. Of 13 specimens of culex examined, which had sucked blood, and were caught inside the nets of plague patients, none contained plague bacilli. On the other hand, 75 per cent of the flies (*Musca domestica*) which do not suck blood, contained bacilli. The bacilli in this case came, in part at least, from the *outside* of the flies, but the fact that mosquitoes are negative is remarkable, if it is true that the blood contains sufficient bacilli to be readily detected in a thick smear. It seems to us, unless further controls are made, that the negative result with mosquitoes depends upon the fact that they are able to make an aseptic puncture, and that they furnish strong evidence against the validity of this test.

The author adduces these facts in support of the view that plague is a septicæmia. This may well be the case, though we regard the evidence from these bacilli insufficient, and consider that the position cannot be well established until it is proved by cultural tests that these bacilli are really *B. pestis*. In the vesicles which occur not uncommonly in plague, the author states that *B. pestis* is present, but it is left uncertain whether or not this was verified by culture of the bacilli, though presumably this was so in some cases, as the bacilli were said to be present in pure culture.

The author considers that there are two types of plague: (1) Plague septicæmia; (2) Primary plague pneumonia. The former have as complications, bubonic and pneumonic manifestations, while in the latter these are rare, though becoming septicæmic before death.

Pathological Anatomy.—Two forms of consolidation of the *lung* are described: (1) A primary pneumonic process; and (2) A patchy consolidation occurring as a complication of ordinary septicæmic plague. These areas the author considers to be areas of infarction. Bronchial and mediastinal glands are enlarged, œdematous, and hæmorrhagic. Great stress is laid on the presence of hyperæmia and hæmorrhages in the *alimentary tract*. Thus the stomach is hyperæmic, œdematous, and spotted with petechiæ, and similar evidence of internal inflammatory action exists throughout the alimentary tract. The liver is enlarged and congested, and on section shows necrotic areas as large as a pea. Plague bacilli can be isolated from these areas. The gall bladder shows signs of petechial extravasations. The bile may contain bacilli in pure culture. The spleen is much congested. Bacilli can be cultivated from it in all cases. The peritoneal cavity contains turbid fluid. There are often extensive hæmorrhages into the mesentery, the mesenteric glands are enlarged, soft and hæmorrhagic. The glands, moreover, may be embedded in a hard, thick mass of hæmorrhagic and necrotic material constituting true buboes. The whole pathological condition is one of severe and extensive hæmorrhagic inflammation, and may be summed up as comprising (1) General congestion and hyperæmia; (2) Widespread hæmorrhagic extravasation; (3) Marked glandular enlargement, œdema, and hæmorrhage; (4) General granular degeneration of organs and tissues.

*Buboes.*—The distribution of buboes is out of 788 cases as follows: Right femoral bubo 238; left femoral bubo, 234; right axillary bubo, 129; left axillary bubo, 91; right inguinal bubo, 26; left inguinal bubo, 18; and a few in other situations. Various observers have noted the absence of lymphangitis as a characteristic of plague. The author, however, finds that lymphangitis exists in connection with the lymph vessels leading from the small intestine, and regards this as favouring his view that the alimentary tract is the main mode of entry of the virus.

Modes by which Plague is Spread.—(1) *Air* is practically negligable as a cause, except by "drop infection" of the air in cases of primary pneumonic plague; (2) *Water* also insignificant as a cause: (3) *Plague corpses*—insignificant: (4) *Insects*—Plague bacilli were found in or on flies, bugs and cockroaches, but not in mosquitoes (*Culex*). The flies in the public mortuaries contained plague bacilli in their fæces. The author is of opinion that the flea takes little part in the spread of plague, and that other insects do not convey the contagion by inoculation, but by contamination of food material. (5) *Food.*—Plague bacilli were found in two samples of rice, and to this mode of infection the author attaches importance. (6) *Rats.*—Acute rat plague is followed by epidemic plague, and chronic rat plague bridges over the periods between epidemics. Cats and mice probably also contribute to the same result.

Bacilli may pass out from the body in (1) Expectoration ; (2) Fæces ; (3) Urine ; (4) Discharging buboes.

Gordon-Tucker[2] holds that rats are infected by man, and not primarily man by rats, and considers the view that an epizootic in rodents is the cause of an epidemic among human beings, a pernicious theory. The author considers that the rat-flea, *P. pallidus* (? *P. cheopis*) has nothing to do with the transmission of plague. He argues that if the flea conveyed the disease, the disease would essentially be one of contact, which it is not. His view is that the disease is a soil infection. Further, he emphasizes the importance of recognizing *atypical cases* at the commencement of an epidemic. The most important among these are cases of sudden death due to hæmorrhage after miscarriage in otherwise healthy young women. The stages of an epidemic are as follows :—

1. Period of quiescence.
2. Period of sporadic *atypical* cases.
3. Stage of local place infection.
4. Early epidemic stage.
5. Fastigial stage.
6. Stage of decline.
7. Period of local immunity and period of quiescence.

Mine[3] investigating an epidemic of plague in Formosa, comes to the conclusion that rats are mainly responsible for the spread of plague, and that plague cases decrease in proportion as rats are exterminated. The black rat (*Mus rattus*) is the species mainly concerned, and to a less extent the brown rat (*Mus decumanus*) or mouse (*Mus musculus*).

References.—[1]A Research into Epidemic and Epizootic Plague (Noronha & Co. Hong-kong) ; [2]*Ind. Med. Gaz.* July, 1904 ; [3]*Arch. f. Schiffs. u. Trop. Hyg.* p. 149, 1904.

**PLEURISY.** *Wilfred J. Hadley, M.D., F.R.C.P., F.R.C.S.*

Pathology.—Last year it was noted that more scientific methods of investigation, and more careful following up of after-histories, tended to show that the majority of primary sero-fibrinous pleurisies were tubercular in nature. Many additional writers have reported series of cases and results of examinations which further emphasize this point, both clinically and pathologically. Bunting[1] collects the results of a number of such authorities (some of whom were noticed last year). In many reports very varying percentages are to be noted (from 15 per cent to 100 per cent), but, collecting all of them, the present reviewer finds that the percentage of tubercle works out at 51·2 per cent ; he thinks this is rather under- than over-stating the truth. Dieulafoy, in an excellent clinical lecture[2], while dwelling on the importance of recognizing that most cases of idiopathic pleurisy, supposed to be due to exposure to cold (*a frigore*), are really tuberculous, states his conviction that non-tubercular cases do occasionally occur. He gives a striking series of cases reported by Lamarre in support of

this opinion, and also refers to Trasbot's report on the frequency of non-tubercular pleurisies in animals, such as the horse, dog, and sheep, which animals are most commonly pleuritic (from exposure) and least commonly tubercular. It was impossible to render guinea-pigs tubercular from injection from the sero-fibrinous pleurisies of such animals.

Diagnosis.—Bearing in mind what has been said with regard to the pathology, it becomes more than ever important to make a correct diagnosis as to the true nature of any individual case. Bunting and Dieulafoy (*op. cit.*) give some helpful points. Dieulafoy summarizes the various methods at our disposal as follows :—

1. *Microscopical* examination of fluid for bacilli : Very unreliable, as they are very difficult to find, even in tubercular cases.

2. *Inoculation :* Gives about 40 per cent positive results, but leaves many cases doubtful.

3. *Tuberculin* injection : Of incontestable value, but it is not free from danger to the patient, and he must be apyretic for the proper application of the test, which, with acute pleurisy, he rarely is.

4. *Cultivation* of the fluid : The medium best suited for this purpose is glycerinated gelose blood ; in positive results, colonies appear on the twenty-sixth day. This is a long time to wait, and a negative result is not always reliable.

5. *Sero-diagnosis* (agglutination test) : He says that Arloing reports that it is not always reliable. The writer has, however, seen good results from its use in cases of phthisis, and thinks that in the hands of an expert it may become a useful means of diagnosis in tubercular cases generally.

6. *Cyto-diagnosis* · Dieulafoy looks upon this as most hopeful. It turns on the different numbers of the various cell elements present in pleuritic effusions, according to their causes—tubercular or not. Thus, in streptococcal cases the polymorphonuclear leucocytes and large mononuclear cells are most abundant. In tubercular cases the lymphocyte is the most numerous cell ; whilst ordinary dropsical effusions, due to heart or kidney disease, are distinguished by the greater numbers of endothelial cells (from the pleura itself), especially when they occur in plates.

Wolff[3], working at this subject, agrees with Widal and Ravant that the cell diagnosis is more reliable than one made by cultural methods, and states his belief that an exudate showing a half, or more, of the cells as small mononuclears points strongly to its tubercular nature. It will be gathered that, aided by one or other of the above methods, it is rare that we are unable to arrive at a diagnosis as to the nature of a pleuritic effusion. It is a pity that most of the methods require special training which render them difficult of application by the general practitioner. The present reviewer has found Jousset's method of examining pleuritic fluid, by first allowing it to coagulate and subsequently examining the *débris* of the digested clot, most

reliable, and quite easy of application in an ordinary case. It cannot be claimed that *all* cases of idiopathic sero-fibrinous pleurisies are tubercular; but all investigations point to the great majority being so, though it is obvious that, as far as the after-history of the patient is concerned, any subsequent pulmonary tuberculosis might be the result of the damage done by the pleurisy, rendering the lung more vulnerable to the omnipresent tubercle bacilli.

Louis Renon[4] draws attention to the occurrence—and reports three cases—of pleural effusion on the right side resulting from pulmonary infarct. He remarks that the interest of the cases lies in the fact that the effusion may be: (1) In the general pleural cavity; (2) Encysted in the mediastinum; or (3) Between the base of the lung and the liver. In the last position, the effusion gives rise to the apparent enormous enlargement (really depression) of the liver. The effusion will be sero-fibrinous, purulent, or hæmorrhagic, according to the nature of the embolism.

TREATMENT.—Dieulafoy (*op. cit.*) advocates **Tapping** in all cases, but especially in large effusions. He points out the danger of sudden death in such cases (mentioning forty cases collected by him), and how fallacious it is to rely on the dyspnœa as an indication for removal of fluid, as there may be none even with large effusions. He acknowledges the advisability of removing fluid slowly, or in small quantities at successive tappings, in some cases; and reminds us to watch all cases carefully after tapping, because of the very rapid return of fluid in many of them. He recognizes the important fact that, as the majority of pleurisies are tubercular, the treatment of the case does not terminate with the subsidence of the acute manifestation; and advocates practically what has become known as "the open-air treatment" with super-alimentation for a long time, "even when the patient considers himself cured."

Waldo[5] considers aspiration a most unsatisfactory proceeding, as the fluid so frequently re-accumulates, and the patient is not so well after as before the operation. He has obtained excellent results from the application to the chest of a dressing soaked in a saturated **Solution of Common Salt**, and strongly advocates the trial of this simple measure in cases where the effusion has been shown (by hypodermic needle) to be clear serum.

REFERENCES.—[1]*Johns Hop. Hosp. Bull.* July, 1903; [2]*Med. Press*, Sept. 1903; [3]*Forts. d. Med.* April, 1902; [4]*Arch. Gén. de Méd.* June 16, 1903; [5]*Brit. Med. Jour.* July 18, 1903.

**PNEUMONIA.** *DeLancey Rochester, M.D., Buffalo, U.S.*

In all infectious diseases there is a local lesion, usually situated at or near the point of entrance of the infecting organism, or at its point of exit, or at both, and a toxæmia, varying greatly in its intensity in different cases. In pneumonia, now recognized as a typical infectious disease, we have a pronounced toxæmia, impairing the nutrition and

interfering with the normal performance of function of the several organs and tissues of the body.

The local lesion in the lung is primarily a congestion, rapidly passing to the stage of fibrinous exudate into the air-spaces, and round-cell infiltration into the pulmonary tissue, producing the so-called hepatization, which ends either in resolution, in disintegration, or, very rarely, in chronic fibroid degeneration. In all cases of pneumonia, there is also a local lesion in the kidneys, consisting of a congestion and some parenchymatous degeneration. This is sometimes very slight, but sometimes becomes so pronounced as to be a serious menace to life.

A brief review of the clinical course of a favourable case shows us the initial chill, usually accompanied by pain in the side, and followed by severe headache and high rise of temperature ; a pulse of moderately increased frequency, full volume, high tension, and normal rhythm ; respiration increased in frequency out of proportion to the frequency of pulse ; anorexia, a coated tongue, a sluggish liver, and an inactive bowel ; urine diminished in amount, with absence or diminution of chlorides, presence of albumin, and usually of casts ; more or less pronounced nervous symptoms, especially headache, and other cerebral disturbances ; cough with rusty sputum ; dry hot skin ; flushed face of a somewhat cyanotic hue ; leucocytosis.

For a week or ten days these symptoms persist, the most important changes being the increasing frequency of respiration, the development of delirium, and the loss in tension, and sometimes change in rhythm, of the pulse. Then there occurs a profuse sweat, the temperature falls, the respirations become less frequent, the pulse improves in rhythm, the patient falls into a quiet sleep, and awakes refreshed and well. Sometimes a watery diarrhœa accompanies, or takes the place of the sweat.

In fatal cases death occurs either from intensity of the toxæmia, from involvement of too great an extent of lung, or from some complication. The chief cause of death, exclusive of complications, is failure of the circulation through degeneration of the myocardium. Several factors enter into the causation of this myocardial degeneration, namely : (1) The toxæmia of the infection acting directly upon the muscle fibre ; (2) The same cause acting in the general system, producing an increase in the arterial tension, thus making harder work for the myocardium of the left heart already suffering from toxæmia or (3) The morbid changes in the lung causing obstruction to the flow of blood from the right heart, thus throwing harder work upon the right myocardium, also suffering from toxæmia. The amount of pulmonary involvement would be a decided factor from this point of view, as well as from that of interference with oxygenation, too great an interference with this function producing death.

Sometimes death occurs from the effect of the toxæmia upon the brain ; wild maniacal delirium wearing the patient out, or a low,

muttering delirium ending in coma and death. Sometimes the kidney bears the brunt of the attack, and uræmia is added to the toxæmia of the infecting organism. Occasionally the gastro-intestinal tract is most seriously involved, and there occurs a violent diarrhœa, or a marked fibrinous inflammation of the lining mucous membrane.

The most common and serious complications of pneumonia from which death may occur, are meningitis, pericarditis, endocarditis, nephritis, and empyema.

Treatment.—For the rational treatment of any acute infectious disease, it is important to note the modes both of recovery and of death, and to establish such procedures as will tend to promote the former and prevent the latter. Such a treatment of pneumonia may be divided into the following general heads: (1) To institute such measures as will relieve toxæmia; (2) To prevent failure of heart; (3) To so treat the local conditions in the lung as to retard the progress of congestion to consolidation, and hasten the progress of consolidation to resolution; (4) To meet complications as they arise; (5) To prevent the spread of the disease to other individuals.

The so-called expectant plan of treatment, in which the patient is kept quiet, sponged at stated intervals, fed properly, bowels kept open, and complications watched for and promptly met as they arise, meets the fourth indication and the fifth, if proper care is taken to destroy the sputum, and disinfect the stools and urine and bedding. It gives a death-rate of from 20 to 40 per cent, the higher rate being among the very young, the very old, those suffering from chronic disease, and the alcoholic.

A form of treatment of pneumonia by large doses of **Digitalis** early in the disease, given with the purpose of overcoming the impending congestion of lung, and so preventing consolidation, and thus jugulating the disease at its inception, has been strongly advocated, and a large number of cases reported with most favourable results; but a careful study of the cases convinces the unprejudiced observer that the diagnosis is very doubtful in the large majority of them. Moreover, the treatment is based upon a wrong conception of the nature of the disease. If our conception of the infectious nature of pneumonia is correct, by the time the chill has taken place the disease is established, and any efforts to jugulate the attack by the use of remedies employed to overcome or prevent pulmonary congestion, are most certainly misdirected; for preventing the change in the lung—and it is doubtful if the digitalis treatment can accomplish this—certainly will not overcome the toxæmia. Two of the most serious cases of pneumonia that have come under my observation have had no pulmonary involvement demonstrable by physical signs.

The success of the **Brand Treatment** of typhoid fever, has influenced some to try the same plan in pneumonia. The conditions in the two diseases are quite different, however, the toxæmia being the only

element in common ; and even here there is a difference, the toxic element in typhoid producing a leucopenia, that in pneumonia a leucocytosis. Moreover, in pneumonia, from the condition of the lung there is a much greater strain thrown upon the right ventricle than in typhoid. This plan of treatment meets few, if any, of the indications. The results, too, have not been any better than, if indeed as good as, those from the expectant plan.

Treatment by the **Pneumococcus Antitoxin** is the natural and rational plan, suggested by the recognition of the infectious nature of the disease. So far, however, the attempts to produce a reliable antitoxin serum, that will preserve its antitoxic powers, have not been entirely successful, and consequently there is very great variation in the results obtained by its use. Moreover, the cost of this remedy of doubtful efficacy, is such as to preclude its use in most cases.

Another method that has been highly lauded is that by the administration of **Creosote** or **Guaiacol** by mouth and by inhalation ; the inhalation being brought about by surrounding the patient with an atmosphere of steam laden with the drug. This plan is advocated upon the ground of the antiseptic and germicidal qualities of the creosote.

I have been unable to find any statistics of cases treated in this manner. The treatment does not, however, appear rational, as it is simply adding another poison to the system of an individual already in a profoundly toxic state. Moreover, creosote in large amounts usually produces great irritation of the kidneys, and as these organs provide one of the avenues of escape for toxic materials from the system, and in cases of pneumonia are almost invariably involved in the inflammatory process, it is wrong to administer any agent that will tend to increase that irritation, and thus run the risk of adding uræmia to the toxæmia of the disease.

Is there, then, any method of treating this disease that meets the indications pointed out, and gives in practice good results ?

In October, 1903, I reported to the New York State Medical Association, 210 cases of pneumonia, treated according to such a plan, with 25 deaths. If from these cases are excluded five who had been sick more than one week before they came under observation ; two who entered the hospital with delirium tremens and with no history obtainable as to length of illness, and died in less than forty-eight hours ; one who was 89 years of age, and had suffered for years from asthma, chronic bronchitis, and a dilated heart ; and one who suffered from typhoid as a complication—and all these, I think, should fairly be excluded—it reduces the number of cases to 201, and the number of deaths to 16, being a death-rate of a fraction under 8 per cent.

If we analyse these 201 cases, we find that 25 were under 20 years of age, and that one death took place in these cases in a child of 12 years, who developed a pericarditis as a complication, giving a death-rate of 4 per cent for that period ; that 115 were over 20 and under 50 years,

and there were 6 deaths, giving a death-rate for these of a fraction over 5 per cent; and that 61 cases were over 50 years, 9 of whom died, giving a death-rate of a fraction over 14 per cent. So far as I know, these figures are not equalled by any other plan of treatment.

As stated earlier, the first indication is to relieve the toxæmia. There are three natural avenues of excretion by which poisons may be carried off; these are the kidneys, the bowel, and the skin.

In all cases of pneumonia we have inflammatory involvement of kidney to a greater or less extent. The attempt to stimulate to excessive functional activity an organ, which is already in a state of acute inflammation is worse than useless, so that stimulating diuretics are positively contra-indicated.

The bowel and the skin remain; and nature has shown by the profuse sweat at crisis, and the occasional critical diarrhœa, that these are the avenues to be preferred. So, our first indication in treatment, the relief of toxæmia, may be met by **Induced Sweats** and **Mild Catharsis.** The last is best produced by the administration of **Calomel** at the onset of the disease, to be followed by the use of a saturated solution of **Epsom Salts** in sufficient dose to produce one or two free evacuations daily. The calomel may be repeated occasionally as indications arise, such as a persistently coated tongue, foul breath, eructations from the stomach, and evidence, upon physical examination, of right-heart distension with or without enlargement of the liver.

Sweating is best and most easily induced, not by the administration of drugs, but by the **Hot Mustard Footbath,** scientifically given in bed with no disturbance of the patient. Much depends upon the proper method of giving this bath, and I have seen failures through lack of such knowledge. The patient, in a nude condition, lies between blankets with his knees flexed and his feet in the tub, which has been introduced under the upper blanket, the long axis of the tub in the line of the patient's body and legs; another blanket passes from under the tub up over the end and over the knees of the patient; two to five blankets, or a fewer number of blankets and a rubber sheet, are then placed over the patient, extending from his neck over the foot of the bed, and tucked in around the foot-tub and side of the patient. The tub at first is filled half full of hot water in which a heaping tablespoonful of mustard has been dissolved, and from time to time during the bath more hot water is added, care being taken that the water is poured against the side of the tub, and stirred in by the hand of the nurse, in order to avoid burning the patient's feet. The bath is kept up from thirty to forty-five minutes, according to the amount of sweating produced. During its administration, cloths wrung out of ice-water are kept constantly on the head of the patient, and plenty of cold water is given to drink. This sweating, in connection with the stimulation to be referred to later, is, in the opinion of the writer, the most important of the general therapeutic measures.

To prevent further bacterial invasion, the frequent and thorough **Cleansing of the Mouth** with a mildly antiseptic solution is practised. I think this a measure of considerable importance, as we know the pneumococcus is present in the mouth in considerable numbers.

While attempting to get rid of toxins by these means, it is important to put and keep the patient in the best possible condition to resist and overcome the toxæmia that is present. For this purpose, care should be exercised in the selection of a proper diet. This should be fluid, and, so far as possible, should be sterile, so that no new poisons may be introduced. A large amount of pure water should be administered, for the purpose of flushing the excretory organs. It is best administered in small amounts at short intervals. Moreover, the patient should be placed in the best ventilated room available, and one to which there is abundant access of direct sun-light. The free catharsis and profuse sweating, besides aiding the elimination of toxins, tend to dilate the capillaries, thus relieving the arterial tension and getting rid of the capillary resistance to the blood flow, making the work of the heart easier, and helping us to meet the second indication of treatment, the prevention of failure of the circulation.

One of the serious dangers, as we have seen, is over-distension of the right heart, which, if allowed to persist, will inevitably cause death. This can often be prevented by careful study of the lung conditions as well as the state of the heart itself, and the prompt institution of the procedure indicated. A careful physical examination of the chest should be made by the physician at every visit ; he can thus tell when congestion is beginning in any part ; and vigorous local treatment will in many cases prevent the further progress of the morbid process. As soon as a portion of the lung is shown by physical examination to be in a state of beginning congestion, the prompt and thorough application of **Leeches, Wet Cups,** or **Dry Cups** over the parts, will often stay the process there ; or if it does not stop it entirely, will delay its progress twenty-four or forty-eight hours, and give an opportunity for the clearing up of any previously involved portion of lung. If dry cupping is resorted to, it should be very thorough, the skin and subcutaneous tissue rising up in the cup to as great height as possible, and turning blue or purple while there. The cups should be left on for half an hour, and the process repeated every four to six hours. I have seen, *post-mortem*, direct anatomical evidence of the local value of this procedure when thoroughly done. During the intervals between the applications of the cups, the chest should be covered with a light woollen jacket. The poultice jacket should be relegated to the dark ages.

With ice applications I have not produced the relief of congestion desired. If, in spite of these local measures for relief, the process still persists, and we begin to have evidence of over-distension of the right heart, such as increasing cyanosis, the pulse losing its tension and becoming small and sometimes irregular, enlarging the liver, the veins

pulsating, and the area of cardiac dulness increasing, chiefly to the right, whether a murmur of tricuspid insufficiency is present or not, prompt relief can usually be obtained by **Bleeding**, taking 8, 10, or 12 ounces of blood from the median vein of the forearm. This procedure may be repeated several times, if need be, in the course of the disease. It is of value both for its local effect in relieving the right-heart distension, and for its general effect in withdrawing a decided amount of toxic material. At this time a little **Digitalis**, given with due regard to its physiological effect, may be of decided value. One of the cases which recovered, alluded to above, a man of forty-eight years whose entire left lung was involved was bled 16 ounces twice, with distinctly beneficial result. **Hypodermoclysis** of normal **Salt Solution** is now recognized as of the utmost value in the treatment of apparently desperate cases. In four cases of alcoholic pneumonia, with delirium tremens and most pronounced toxæmia, treated during the last year, the daily or twice-daily, and in one case thrice-daily hypodermoclysis acted marvellously, and saved lives that, I believe would have been lost without it. The *modus operandi* is not yet satisfactorily explained, but the clinical fact of its great value is proved beyond doubt.

If more than one lobe is involved, the regular administration of pure **Oxygen Gas** at stated times, shortening the interval and prolonging the duration of the administration if cyanosis persists or increases, or if the frequency of breathing progresses to dyspnœa, has proved of undoubted value in a number of cases.

While these procedures to relieve the toxic condition and the local obstruction to the pulmonary circulation are being carried out, direct stimulation of the heart is of the utmost importance. It should be begun as soon as the diagnosis is made, and not delayed for the appearance of symptoms indicating cardiac failure. For this purpose our reliance should be placed upon **Strychnine, Brandy,** and **Ammonium Carbonate,** or **Aromatic Spirits of Ammonia.** As soon as the diagnosis is made, the strychnine should be begun in doses of 0.002 gram at four- to six-hour intervals, as indicated. The interval may be shortened and the dose increased, as symptoms which call for such increase in dose appear. As much as 0.004 gram every two hours may be given hypodermically with the best results.

Next to strychnine, brandy is our best stimulant. Nevertheless, in some cases it seems to produce decided cerebral disturbance, particularly in those addicted to its abuse. In such cases ammonium is a most useful substitute. These drugs are usually well borne by the stomach if combined with **Liquor Ammonii Acetatis** and administered in mucilage or milk.

In case of sleeplessness and restlessness, **Chloralamide, Chloral, Dover's Powder, Morphine** and **Codeine,** are to be recommended, in the order named, though with the thorough attention to the relief of

toxæmia, by keeping the bowels and skin active, it is seldom that recourse to hypnotics is necessary.

Complications which may occur, should be met promptly by appropriate treatment. *Pericarditis* is best treated, and sometimes cut short in its progress, by the prompt application of a sufficient number of **Leeches** over the præcordium, followed by persistent and continuous application of the **Ice Bag.** If, in spite of such treatment, fluid accumulates in sufficient amount to embarrass heart action, it should be promptly evacuated, whether it be pus or serum. For the treatment of the *acute endocarditis* that occasionally occurs, the following-out of the general plan of the treatment of the pneumonia, with an enforced rest for longer than is ordinarily necessary, gives the best results.

The pain of the *acute pleurisy*, which is the almost regular accompaniment of the pneumonia, is usually best relieved by prompt and vigorous **Cupping**; occasionally a hypodermic of a small dose of **Morphine** is necessary. If it goes on to effusion, it should be aspirated if serum, and drained if pus.

*Lung abscess*, which is more often a sequel than a complication of pneumonia, should be promptly evacuated and drained through the chest wall. Some years ago I reported three cases treated successfully in this way. If the involvement of kidney becomes so pronounced a feature as to become a complication, it is best treated by persistence in **Fluid Food**, especially milk and mildly alkaline water in large amounts, the keeping up of the sweats, and the application of **Leeches** or **Cups** to the loins.

*Meningitis* complicating pneumonia is almost always fatal, but occasionally is not, and is best treated by **Leeches** applied at the back of the neck and in the temporal regions, and the continuous application of the **Ice Cap** to the head, the exclusion of light and noise from the patient, and the quieting of the patient by **Bromide,** if possible, or by **Morphine,** if necessary. In one case **Spinal Puncture** and the withdrawal of the fluid was followed by recovery.

Complications, however, are not common under the sustaining, eliminating plan of treatment described, which may be briefly summarized as follows :—

1. The sustaining of the metabolic processes of the individual by the administration of easily digested or predigested **Foods** in small quantities at stated intervals, the administration of large amounts of **Pure Water** for eliminative purposes, and of **Oxygen Gas** by inhalation whenever the absorbing surface of the pulmonary mucosa is involved to such extent as to interfere with proper metabolic oxygenation.

2. Elimination : (*a*) By the liver and bowel, through the vigorous use of calomel and salts ; (*b*) By the skin, through sweats induced by external heat ; (*c*) Through withdrawal of blood, when indicated by right-heart distention.

3. Stimulation of the heart by **Strychnine, Alcohol,** or **Ammonium**

**Carbonate,** and in suitable cases by the subcutaneous injection of **Normal Salt Solution.**

4. The local treatment of the lung by **Leeching, Wet Cupping,** or **Dry Cupping,** as indicated.

5. The recognition and prompt treatment of complications as they arise.

6. Prevention of spread of the disease by destruction of sputum, by burning and by disinfection of urine and fæces, and the boiling of clothing and bed-clothes.

That it is a rational attempt to meet the therapeutic indications in the treatment of pneumonia, cannot be denied. That it accomplishes its object better than any other method of treatment in vogue at the present time, is proved by the cases cited.

REFERENCE.—[1]*Med. News,* Feb. 13, 1904.

**POLYPUS (Nasal).** *P. Watson Williams, M.D.*

ETIOLOGY AND PATHOLOGY.—It is now very generally admitted: (*a*) That the so-called mucous polypus so commonly occurring in the nose, is not a true neoplasm, but is essentially a localized œdematous patch of the nasal mucous membrane; (*b*) That its presence is usually associated with and due to inflammatory or degenerative changes in the ethmoidal bone corresponding to the polypoid area.

Various theories have been advanced to account for these formations, though none have obtained general acceptance. The writer believes they are due to infective inflammatory changes in the muco-periosteum, leading to localized obstruction in the lymphatic channels. If the cause is transient a temporary œdema results, but when the lymphatics are persistently blocked, the accumulation of lymph in the affected area results (*a*) In constantly increasing size of the œdematous tumefaction, which soon becomes pendent, and eventually exceeds in dimensions the area corresponding to the blocked lymphatic, *i.e.*, it becomes pedunculated; (*b*) As in elephantiasis, the lymphatic (as distinguished from venous) obstruction, the tissues hypertrophy, hence the fibrous stroma and other constituents of the implicated area of the nasal mucosa actually increase *pari passu* with the exudation, and the polyp becomes more vascular, there being little arterial or venous obstruction; (*c*) Finally various secondary degenerative changes arise in the diseased structure called a polyp, causing obstruction in the glandular ducts, with mucoid degeneration of the lining epithelium. The essential causes of the initial changes he believes are infection of the mucosa by pyogenic or other micro-organisms; hence, any persistent suppuration in the antrum of Highmore or the ethmoidal cells, maintains the conditions believed to be essential to polypoid formation, conditions which lead on the one hand to the formation of polypi, and on the other set up the changes in the bone underlying the implicated muco-periosteum. This

explains the well-observed fact that as long as an antral empyema exists, polypi may continually re-form in the middle meatus, however often removed; while often enough actually existing small polypi will disappear, if the antrum be kept well washed out and free from pus. Small, single, localized areas may be infected, and start the formation of a polyp, and the original infection having become cured, the polypi may go on growing gradually for years. Such polypi when removed, would not recur. Other conditions may probably produce the same localized lymphatic obstruction in those rarer cases where single polypi do not appear to be associated with any other abnormal conditions in the nose.

A valuable contribution on the mode of origin of nasal polypus by Eugene Yonge[1] merits fuller consideration than space permits of here. His observations have been carried out during the last two years, and are an attempt to demonstrate a nasal mucous membrane in which the special changes and appearances could be traced from normal tissue up to polypus formation. To sum up the results of examinations of normal nasal mucous membrane, it may be said that in the areas most generally selected by mucous polypus, the mucous membrane is thin, and usually possesses low folds. The subepithelial tissue is loose and abundant, and the erectile tissue comparatively scanty. The glands are numerous, except on the outer concave surface of the middle turbinal. It is the subepithelial tissue which is of special interest, as its structure in the middle turbinal and meatal regions appears to be the principal factor in determining the selection, by œdematous outgrowths, of these districts for their site of origin, for in the adolescent and middle ages the subepithelial tissue becomes looser from the lower border of the middle turbinal to the lower end of the middle meatus. Turning to the examination of polypus cases, Yonge found that œdematous infiltration was present in this particular area, and in this region only, and that this œdematous area soon formed well-marked œdematous folds; and that these folds were absent in normal cases, and in chronic inflammatory nasal conditions, in chronic rhinitis, etc., not associated with polypi. He considers these folds represent the initial mechanical stage of mucous polypus. But their determining cause he believes to be glandular changes, *viz.*, degeneration and cystic dilatation of the mucous glands. He figures sections which show abrupt œdema immediately superficial to glands that are undergoing cystic degeneration, while firm non-œdematous tissue was found wherever (in the polypus region) the underlying glands were healthy. Yonge believes that the primary condition is glandular degeneration, to which the œdema is secondary. The author suggests that the primary lesion is lymphatic obstruction leading to a secondary œdema and glandular degeneration; while Hopmann, and later Grünwald, consider that the œdematous polypi are the result of vascular changes and obstruction. The practical

point of the author's view is that polypoid formation could be in a measure controlled by the removal of the toxic cause, either by surgical interference or by the administration of antitoxins.

Other recent contributions, *e.g.*, those of Packard[2], and Lambert Lack[3], are of much value and interest, emphasizing as they do the association of bone disease, in at least the great majority of nasal mucous polypi. They rightly insist on the necessity of removing the diseased bony areas if the polypi are not to recur, but whether the bone disease is the primary cause of the polypi, as generally believed, is another matter, and remains, in the author's opinion, an open question.

TREATMENT.—In any case presenting nasal polypi it is necessary to determine the existence of any suppuration in the nasal accessory cavities, otherwise the removal of the polypi will only afford temporary relief, and they will certainly recur if accessory sinus suppuration is allowed to persist. If the antrum is the seat of suppuration, trans-illumination will probably reveal its existence. But if the ethmoidal cells or the frontal sinus are the source of purulent discharge, unless, indeed, pain and tenderness point to inflammatory affections in these cavities, it may not be possible to diagnose the essential cause of the trouble till the removal of the larger obstructing polypi reveals the source of the localizing purulent discharge. Such accessory cavities and all diseased ethmoidal cells must be opened up in such a way that the purulent discharge can drain freely.

The snare is now generally employed for the removal of polypi, the base of the polypus being subsequently cauterized, curetted, or otherwise treated. Bronner[4] advocated the application of **Formalin** to the roots of the polypi (after snaring), having first applied a powder consisting of equal parts of cocaine, eucaine, and desiccated suprarenal extract. After a few days a formalin spray (1–500 up to 1–100) is ordered to be used thrice daily for a week or two, and then less frequently. When the spray is painful, as it is in some cases, he finds the use of a **Parolein Spray** beneficial before the application. He also uses **Insufflations** of **Tannoform, Aristol,** and **Boric Acid.** He uses this method in all cases, but in many surgical interference is necessary. He deprecates an early resort to the "radical method" of thoroughly scraping the ethmoidal cells, as being dangerous and not always successful. The formalin he applies on a brush of absorbent cotton, strictly limiting its action to the diseased parts. The writer has to some extent discarded the use of the snare, preferring in many cases to remove a polyp by means of small forceps. It is sufficiently small in the shank to permit of the forceps being introduced right up to the root or stem of the polypus, which is then seized and removed, the process being repeated rapidly till all are removed. It is short and light, and one is well able to feel whether it has seized a polypus or a turbinal, in those cases where from the size of the polypus it cannot be actually guided by sight. Especially if nitrous oxide gas or ethyl

chloride anæsthesia is used, the rapidity and comfort to the patient presents many advantages over the discomfort of the snare, which so many sensitive patients find by no means insignificant.

St. Clair Thomson[5] states that when the anterior ethmoidal cells are diseased, an external operation through the ascending process of the maxillary process is the only effective method of reaching this region, but it is seldom that symptoms justify such a measure. There are cases in which a patient with nasal trouble will find it safer, as effective, and more economical, to visit his medical man two or three times a year, than to submit to a serious and expensive operation, of which the result cannot possibly be guaranteed. The galvanic snare used to be employed with the object of preventing hæmorrhage, and the galvano-cautery was used extensively for "destroying the roots" of the polypi. Bleeding is never excessive in cases of simple polypi, and may be salutary. The cauterizing of the roots was based on a mistake in pathology, and the inflammatory reaction can only be harmful.

References.—[1]*Jour. Laryng.* Sept. 1904; [2]*Amer. Jour. Med. Sci.* Nov. 1903; [3]*Clin. Jour.* Oct. 21, 1903; [4]*Brit. Med. Jour.* Oct. 31, 1903; [5]*Pract.* Feb. 1904.

**PROSTATE** (Diseases of). *E. Hurry Fenwick, F.R.C.S.*

Anatomy of the Normal and Pathological Prostate.—Mr. Thomson Walker, who has studied the anatomy of the normal and pathological prostate with great care, records several fresh facts of real value[1], from which the following practical points have been selected:—

*Avoidance of Incontinence.*—It was always a fear lest in removing the huge prostate the vesical sphincter might also be removed and incontinence result. But as the prostate enlarges, an important change takes place in its relation to the bladder wall. The base of the prostate is covered by a layer of circular bladder muscle, and this again by the inner longitudinal layer of muscle which passes into the urethral wall. A portion of the upward-growing prostate insinuates itself within the circle of the sphincter vesicæ. The sphincter becomes more and more widely dilated, until, in the prostates which have a considerable intra-vesical bulk, it forms a wide circle enclosing within its grasp a mass of prostate around which the thumb and forefinger can barely meet. The sphincter thus pressed back, does not atrophy, as might be expected. Its fibres, partly from being crowded back together, and partaking also, no doubt, in the general muscular hypertrophy which affects the bladder, are more compact and well defined than those of the normal sphincter. Coincident with this continuous dilatation of the bladder sphincter, there is an upward pressure against the sheet of longitudinal muscle fibres which is spread out over the trigone and passes into the urethra. At one point, or at several, the fibres of this layer separate, and allow a nodule of prostatic tissue to appear immediately under the bladder mucous membrane. Should

this nodule protrude into the bladder between two strong bands of longitudinal muscle, it is not unlikely that it may become more or less pedunculated. *Figs.* 36, 37, 38, 39 explain these points.

*Points in the Pathology of Senile Hypertrophy.*—Mr. Tobin[2] remarked that, whereas when he read a paper on this subject some ten years ago, all the specimens were derived from the *post-mortem* room, now the operating theatres provide the material for discussion. This material usually came in two shapes: One, a smooth-faced, easily-enucleated adenoma, often of large size; the other, commonly a

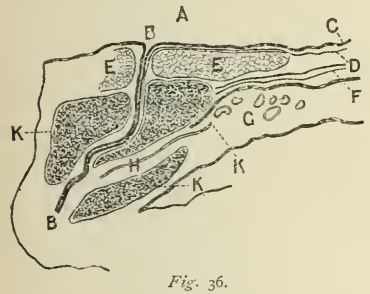


*Fig.* 36.

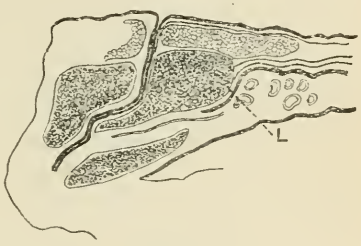


*Fig.* 37.

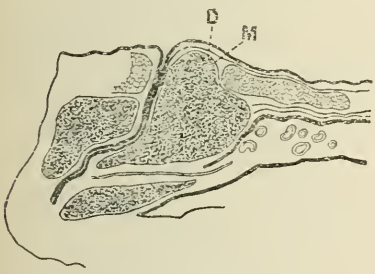


*Fig.* 38.

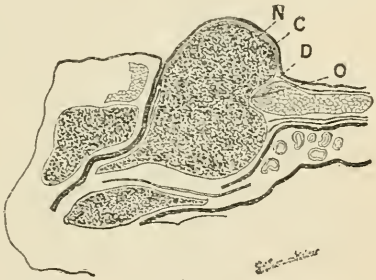


*Fig.* 39.

*Fig.* 36.—*Tracing from vertical anteroposterior section through normal prostate.* A, Bladder cavity. B, B, Prostatic urethra. C, Bladder mucous membrane. D, Inner longitudinal bladder muscle. E, Sphincter of bladder. F, Outer longitudinal bladder muscle. G, Seminal vesicle. H, Ejaculatory duct. K, K, K, Prostatic gland tissue.

*Fig.* 37.—*Early stage of enlargement.* L, Wedge of prostatic tissue separating seminal vesicle from bladder base.

*Fig.* 38.—*Early stage of enlargement.* L, Nodule of prostatic tissue dilating sphincter of bladder. O, Inner longitudinal layer of bladder muscle still covering M.

*Fig.* 39.—*Late stage of enlargement.* N, Large intra-vesical nodule of prostate covered only by—C, Bladder mucous membrane. D, Inner longitudinal layer of bladder muscle through which N has burst. O, Groove in enlarged prostate formed by bladder sphincter.—[THOMSON WALKER.]

smaller mass with a rough surface and looking like muscular tissue to the naked eye, and containing in its centre the prostatic urethra, torn portions of which, or of the membranous urethra, hung out at one end. Specimens presenting such points of identification had been looked upon as showing hypertrophied prostate removed in its entirety. Anyhow, such, he said, was his opinion till reading what

he called an epoch-marking paper on this subject by Mr. Wallace[3]. He then showed some recently removed specimens, which he maintained, both microscopically and macroscopically, fully bore out Mr. Wallace's contention. Among them was one which he described as follows: "When my finger, shelling out this large adenoma, had reached its posterior surface and was still between the layers of the surgical capsule, I opened into a sac in which these calculi were lying free. They are, as you see, a hundred or so in number, varying in size from a grain of snipe-shot to a swan-shot, smooth and round except one, which is the size and shape of a bean. The received opinion is that calculi such as these develop primarily in the glandular crypts of the prostate, and that their presence in one pocket is due to an amalgamation of crypts. If this is so, the opening up of these crypts while my finger was traversing the capsule, points very clearly to the composition of that envelope."

*The Beginnings of Prostatic Hypertrophy.*—Dr. A. Rothschild, of Berlin[4], has made histological examination of thirty prostates belonging to the third, fourth, and the beginning of the fifth decades of life, *i.e.*, to the time of life when clinical symptoms of hypertrophy arise. He carefully excluded cases of death from diseases which might invalidate the correctness of his observations. In 90 per cent of the cases there was homogeneous, chronic inflammatory changes of the prostatic glands, *viz.*, glandular catarrh, with proliferation and desquamation of the epithelium, or pus mixed with the secretion, and an intracellular collection of round cells in foci situated under the epithelium or between the glands. In places there was connective tissue induration.

Finger found the same histological condition in only 7 out of 120 cadavers, where the disease followed directly on chronic gonorrhœal urethritis. Ciechanowski found the identical condition in a number of true prostatic hypertrophies in old people. He considers the hypertrophy chiefly due to a passive widening of the glands, the result of the formation of connective tissue (sub-epithelial or peri-glandular) causing partial or complete closure of the lumen of the gland outlet, by means of which the gland substance becomes ultimately destroyed. He concludes that neither a glandular, neoplastic growth, nor a primary increase of the muscle, is usually responsible for the prostatic enlargement. Rothschild agrees with Ciechanowski and Finger that gonorrhœa is the most common cause of prostatic hypertrophy[5].

*Causation of Prostatic Hypertrophy.*—In discussing prostatic enlargement Rosving[6] discredits all the theories which have thus far been advanced in regard to the pathogenesis of this affection. Basing his theory on the assumption that the life and motility of the spermatozoa are dependent on the prostatic secretion, he suggests that the prostatic hypertrophy is an effort on the part of nature to effect a compensatory increase in the quantity of the prostatic secretion,

to make up for the deficiency in its quality resulting from senile changes. He considers that the true solution for the cause of prostatic enlargement will be found by working along the lines of the above theory.

Surgical Treatment.—The main interest of this year's literature centres round the operative treatment of the enlarged prostate. Brilliant cases of successful excochleation of the gland are reported from all countries; the suprapubic route being apparently most in vogue in Great Britain, and the perineal in other countries. It is, of course, impossible to quote individual cases, or to again touch upon the differences of technique, as these were fully set forth in last year's *Annual*, but it is to the practitioner's benefit to briefly review the various opinions of operators of standing and worth.

The most exhaustive paper in the long list of contributions to the subject is an able article by F. S. Watson, of Boston. There is in it an excellent historical review, which need not be alluded to beyond saying that it settles the priority of the various claimants to the honour of being the introducer of one or other of the various methods of excochleation. Mr. Watson discusses the primary factors determining the choice of operation under the heads of: (*a*) Their relative dangers; (*b*) Their relative limitations; (*c*) The character of their respective results. He gives the following figures:—

(1) Actual Mortality.

| | Cases. | Deaths. | Mortality. |
|---|---|---|---|
| Total removals, by perinæum | 530 | 33 | 6·2 per cent. |
| Total removals, supra-pubic | 243 | 28 | 11·3 ,, ,, |

| Causes of Death | Uræmia. | Sepsis. | Shock. | Post-operative Pulmon. Comp. |
|---|---|---|---|---|
| Perineal Prostatectomy | 35 | 17·8 | 21·4 | 17·8 per cent |
| Supra-pubic Prostatectomy | 34 | 8·6 | 30·0 | 22·0 ,, |

Cures.

| | Cases. | Cures. |
|---|---|---|
| Perineal Prostatectomies | 145 | 87 = 60 per cent. |
| Supra-pubic Prostatectomy | 53 | 35 = 66 ,, |

If "improved" cases are added we have as good results. Perineal give 88·8 per cent, and suprapubic 90 per cent.

Mr. Watson, who appears to have suprapubically extirpated the prostate with its urethra in one mass in 1897, that is to say, after the manner of Mr. Freyer's "new operation" of 1902, gives his conclusions as follows:—

1. The most important single factor in determining whether or not radical operative treatment should or should not be applied, is the capability or the reverse of the renal function. Other than this are the general strength or feebleness of the patient, his comfort or

suffering, and the probability of the continuance of the one, or the occurrence of the other, if operative treatment is not applied.

2. Radical operative treatment has not as yet reached the status at which we are justified in saying that all cases of prostatic hypertrophy should be submitted to it as soon as the condition is clearly made out, and has begun to give rise to slight symptoms. But we are justified in saying that patients should be given the benefit of it at a *much earlier* stage of the malady than it has been customary to apply it; and that where it is thus applied by those skilled in its performance, and the patient's condition is not unfavourable to the performance of an operation of this magnitude, the mortality will be a trifling one, and the risks *not nearly so great as those entailed by the use of the catheter.*

3. The operations should be undertaken, under favourable circumstances, as soon as the above conditions occur.

4. With regard to choice of operation, the following are the writer's conclusions: (*a*) Under conditions in which there is nothing to prevent a free choice of method, the total removal of the gland by the best of the perineal technique is that of choice; (*b*) When any condition is present which makes the perineal operation too difficult of performance, or is a contra-indication of any sort to its application, the suprapubic operation is the operation of choice; and when contra indications are present which make this operation undesirable, the Bottini becomes the operation of choice; and when the patient's condition is such as to make any of the above three methods inappropriate and we are obliged to do something, we should do a palliative operation for drainage; (*c*) Cystoscopic examination should, *when it can readily be done*, precede operations of all sorts in which there is any doubt as to the exact natures of the hypertrophies, and is essential to the proper performance of Bottini. Its utility with regard to the other operations is that of learning whether or not there is present a middle lobe of such size and position as to make the perineal operation especially difficult of performance.

Bruce Clarke[7] discusses several most interesting and suggestive questions bearing on the pathology and varieties of the enlarged prostate, and the indications which should be laid down for operative interference. He adds: "Of 33 cases related, I have lost but 3 from the operation, and these were all amongst my earlier operations. This gives a mortality just over 9 per cent. I feel sure that, with growing experience, we shall be able to reduce that mortality still further. If so, there is no reason why that condition known as catheter life should not in the main disappear. To some, it is true, it proves a matter of but slight inconvenience, but there are few who would not gladly resume their more youthful habits of micturition, even at the risk of an operation, if they realized to the full the dangers they are incurring from sepsis, quite apart from the weakness and lack

of energy which is brought on by frequently rising at night to empty their bladders. If the best results are to be obtained, the operation must be performed before the bladder becomes septic."

Mr. Mansell Moullin[8], in introducing for discussion the treatment of the enlarged prostate, said : " An enlarged prostate can be removed more or less completely either through a perineal or a suprapubic opening. When the bladder is very small and rigid from repeated attacks of cystitis, and the prostate is very hard and dense, the former method is indicated. Under all other conditions, the prostate, as from the nature of its surroundings it must grow up towards and into the bladder, is best approached through the bladder. Fourteen years ago McGill advocated and performed this operation, and though various modifications have been introduced since then, it remains in all essential details the same. McGill described how the growth was to be enucleated with the finger after dividing the mucous membrane of the bladder, and himself enucleated and exhibited both lateral lobes removed in this way. In 1892, in the Hunterian Lecture delivered before the Royal College of Surgeons of England, I pointed out that ' if the operation is to prove successful it resolves itself into removing the whole of the vesical mass, whether it springs from the lateral lobes, or is an upgrowth from the posterior wall, or is a detached nodule, and then extending the exploration down the whole length of the prostatic urethra,' and I cited some instances in which the operation had proved, or nearly proved, a failure because the growth had not been followed down the prostatic urethra. That was the operation I performed then, following McGill's directions ; it is the operation that I have continued to perform since ; it is the operation that is performed now generally, and it is one that I can thoroughly recommend for these cases. A certain amount of confusion, it is true, has been caused by erroneous description of what has been called the capsule of the gland. But it has been conclusively shown by Shattock and Wallace that the covering on the enucleated masses is a pathological product formed around those masses out of the surrounding tissues, by the way in which they press upon them and condense them in their growth. The larger and the more lobular the masses of which the enlarged prostate is composed, the more easily can they be shelled out, because of this fictitious capsule which they form around them ; and there can be no doubt that for this form of enlargement this method of operating will not only supersede all others, but will do away with the treatment by habitual catheterization, for which these cases are by no means suited. Only if the prostate, in addition to being enlarged from glandular overgrowth, is in a state of intense congestion, this must be allowed to subside first under the influence of constitutional treatment, and the patient must be warned that if the muscular coat of the bladder has been ruined already by catheterization and cystitis, removal of the enlarged

prostate cannot restore it, though it will help it by rendering its work more easy."

Orville Horwitz, of Philadelphia, presented a paper on the *Best Radical Operation for Senile Hypertrophy*, based upon a study of 141 radical operations. The surgical world, he said, was of the opinion that the danger began as soon as it became necessary to resort to the catheter. He would urge the importance of having a surgeon in attendance as soon as it became necessary to resort to the catheter. One cause for the diversity of opinion among surgeons regarding the proper method of dealing with prostatic cases, was the attempt to apply the same method of treatment to all cases. The fact was that every case was a law unto itself, and the method of treatment must depend upon a careful consideration of all the features of the case. A complete prostatectomy was justified if performed early, before the individual was broken down in health and secondary complications had supervened. The recovery was usually rapid under such circumstances. A complete prostatectomy in old people who were feeble and presented complications, yielded a grave prognosis, the mortality ranging between 15 and 18 per cent. In 90 per cent of all cases the gland could be readily removed by means of a median perineal incision. A suprapubic prostatectomy was safer if combined with perineal drainage. The perineal prostatectomy was suitable in those cases in which the enlargement of the lateral lobes tended to progress toward the rectum, obstruct the urethra, or project backwards into the bladder.

Bolton Bangs, of New York, submits that a broad discrimination must be made between hospital patients and the well-to-do, intelligent private patients. In the former class, the primary retention should be the indication for radical treatment. It was not so difficult to choose the operation, as to decide when and upon whom to operate. Primary retention was not a sufficient indication for the treatment of the individual. The patient should, of course, be kept under the supervision of the family physician or of a surgeon, in order that the golden moment might not be lost when operation could be done with the best results. It should also be remembered, that every man who had frequent nocturnal urination and some residual urine, was not necessarily a victim of a serious and progressive enlargement of the prostate.

*Prostatectomy.*—Wiener[9] reports six cases of suprapubic prostatectomy performed under nitrous-oxide anæsthesia. The general subject of prostatic enlargement is touched upon, and his paper concludes with the following assertions: (1) Suprapubic prostatectomy can be rapidly and safely performed under laughing-gas; (2) Any patient who can stand laughing-gas for ten or twelve minutes can have the operation performed; (3) Old age, diabetes, and cystitis are no contra-indications; (4) All the contra-indications usually

mentioned are contra-indications, not for the operation, but for the administration of ether or chloroform. The value of laughing-gas and of *rapid work* in these old prostatic cases cannot be over-estimated. These two factors are, he believes, the keystone to success in supra-pubic prostatectomy. Few, indeed, are the patients, even though eighty years of age, or suffering from diabetes or sepsis, that cannot be entirely cured.

Herbert Allingham[10] gives his opinion as follows: Sufficient experience has now accumulated to show that total extirpation of the gland is undoubtedly the best procedure for those cases in which the symptoms are not controlled by regular catheterization. Other operative measures, such as vasectomy, have proved to be of little value, whilst partial removal of the gland is not easier than total extirpation, and its results have not been nearly so satisfactory. It seems probable, therefore, that complete removal of the gland will become the routine practice for all cases of enlarged prostate in which the symptoms are not readily controlled by palliative measures, and for those cases in which the condition is definitely, though perhaps slowly, progressing. The results of this procedure are excellent, in spite of the age of the patients and of serious complications which are frequently present, either locally or in other parts of the body.

Gilbert Barling[11] says: I hesitate yet to commit myself to any dogmatic statement as to which cases should be selected for operation and which rejected, but my inclination is to reserve it for cases in which the prostate conforms to the large elastic and succulent type. It goes almost without saying that patients should not be allowed to fall into a worn-out and poisoned condition from pain and cystitis, without prostatectomy being considered. It is one thing to remove the prostate of a fairly hale old man at the commencement of catheter life, but quite another to do so when disturbed rest, pain, and sepsis have broken him physically and mentally. One limited class of sufferers from this distressing condition will obtain immense benefit from Freyer's operation; I allude to the young prostatic subjects, one of which is included in my cases. Whilst about fifty-five is the usual age at which prostatic overgrowth occurs, there are a few patients in whom symptoms exist in the early forties, and catheter life is reached by forty-five or even earlier. To such, the boon offered by prostatectomy is enormous, and I feel justified in urging them to seek relief in this way. In yet another group of these cases very great benefit is to be expected, namely, in patients where vesical stone is complicated with enlarged prostate. Unlike the last, this group is a considerable one in point of numbers. Such patients, if submitted to litholapaxy, are apt to get recurrence of stone; in some cases, no doubt, because a fragment is left behind to form a nucleus for a phosphatic deposit in the presence of a cystitis; in others because the enlarged prostate prevents the expulsion of small stones formed in

the kidney and passed into the bladder. If, instead of crushing the stone, suprapubic section is resorted to, the wound is a long time in healing in the presence of an enlarged prostate, and the function of micturition does not resume its normal course, but remains too frequent and often painful as well, whilst residual urine may call for the assistance of the catheter. In the future, when vesical calculus and enlarged prostate co-exist, it will I believe become the routine practice to remove both by high section of the bladder.

Herrick[12] gives the following consensus of opinion in the current literature: Prostatic hypertrophy is now curable by means of an operation which, though serious, is not hazardous when undertaken in *proper time and manner*. Failure of palliative treatment; general infection, especially if repeated, as in irritable cases; obstructive cases unless promptly relieved by the sound; also cases in which residual urine is increasing despite catheterization, or in which the patient's general health is being impaired, all indicate the necessity and time for operation. Anatomically, and now surgically, the simple perineal is the direct and preferable route. Rarely, suprapubic exploration or lithotomy may be advantageously added to it. As statistics accumulate, he believes that radical cure may further anticipate the course of the disease.

Moynihan[13] says: Operations upon all patients suffering from the complications of senile enlargement of the prostate are necessarily serious. All the patients are over fifty-five, and all of them must have suffered in greater or less degree from some of the complications—retention, inability to pass urine, dependence, partial or complete, upon the catheter, cystitis, or hæmaturia—before operation was recommended. It is, as a rule, only in the cases where catheter life is impossible or has ceased to be a relief, that operation is advised. Many of the patients are broken in health from loss of sleep, loss of appetite, and constant anxiety as to their condition. They have all suffered the misery of catheterism. The patients are, therefore, almost without exception bad subjects for operation; but, notwithstanding this, their recovery after operation is rapid and remarkable.

The editor can only repeat his own conviction, published as soon as the suprapubic operation was re-introduced, that it was valuable for all very large and elastic prostates, the intra-capsular contents being shelled out; but that the perineal operation was an ideal one for small, hard, obstructing prostates; and finally that carcinomatous prostates had better be left alone. In this latter respect, the following opinions are to the point:—

*The supposed increase in Prostatic Carcinoma.*—Fenwick[14] pointed out, in 1902, the apparent increase in number of cases of carcinoma of the prostate, and mooted the question as to whether this was not an additional reason for early prostatectomy. He had, however, been

unable to record any success in the removal of the hard carcinomatous prostate, even in the earliest stages.

Hawley[15] also holds that carcinoma of the prostate is more common than was formerly believed, and that radical cure of this disease is possible in early cases. It is, he states, often unrecognized, both during life and on macroscopical *post-mortem* examination. In recent histological investigations made by Albarran and Hallé, several specimens of cancer of the prostate have been found, among those labelled as simple hypertrophy in the Musée Guyon. The disease, it is believed, is decidedly operable before metastasis has taken place, and as decidedly inoperable in face of secondary invasion of the bladder and glands, and bones. The operative treatment in suitable cases should consist in liberal perineal exposure of the prostate, after preliminary exploration of the bladder and peri-prostatic structures, and total intra-capsular enucleation. In a paper on the operative treatment of hypertrophied prostate, Pousson[16] points out that recently-acquired knowledge with regard to the histological lesions of prostatic enlargement, has led surgeons to consider the question of the indications of prostatectomy from a fresh point of view. In addition to the essentially benign forms of senile degeneration of the gland, presenting a glandular, a fibrous, or a mixed type, there is also a form of malignant tendency which, commencing as true adenoma, may undergo a conversion into some form of epithelioma. In five out of twenty-three enlarged prostates removed by this author, the prostatic new growth deviated more or less from the benign type, and in one instance the diseased gland presented the aspect of carcinoma. If clinical investigations confirm these results of pathological research, and show that prostatic hypertrophy is often complicated by malignant degeneration, it will become necessary to widen the field of surgical intervention, which has hitherto been restricted to cases of dysuric trouble. In the absence of positive signs which would permit an early diagnosis of this conversion of a benign into a malignant growth, it would be prudent, the author holds, for the surgeon to look with suspicion on all cases of prostatic hypertrophy in which the disease, commencing too early or too late in life—that is to say, before the age of fifty-five or after that of seventy—takes a rapid course, and gives rise, even before the period of retention, to hæmaturia and pain. The prostate in such cases will usually be found on rectal examination, to be of stony hardness, tender, and irregular at its surface.

Mr. Reginald Harrison[17] in commenting upon suprapubic removal of the enlarged prostate, says: "The first question I would raise is relative to malignant disease of the prostate; is it common, or not, and what should be our attitude to it? My belief is that carcinoma of the prostate is far more common than we have been led to believe. In performing over 100 vasectomies on different persons for enlargement of the prostate, the operation failed to benefit the patient in

several instances, for the reason that the growth proved to be carcinomatous. And this leads me to consider how we are to recognize this state, and thus to avoid attempting useless prostatectomies. In the early stage there is considerable difficulty in doing this. Carcinoma of the prostate is not infrequently met with in younger persons than the ordinary forms of prostatic enlargement or adenoma. Cancer of the prostate may occur at or about the age of fifty, and in this respect corresponds with carcinoma of the female breast. It is usually associated with considerable lumbar and sciatic pain. Later on, it involves more or less of the chain of glands in the groin, including the femoral, which it indurates. Examination by the rectum not only finds the gland of stony hardness, but of marked fixidity on pressure. Slight hæmorrhages are occasional, but serious alterations in the character of the urine and obstruction to catheterism are often delayed. Loss of flesh is usually noted. These are the ordinary symptoms of carcinoma of the prostate.

"In several instances I have seen, where the diagnosis was verified by microscopical examination, the disease was marked by slow progress, and the slightness of the local symptoms that were present throughout. It appeared to prove fatal by the general decay that was induced, rather than by any interference it occasioned with the function of micturition, thus contrasting with advancing forms of ordinary prostatic hypertrophy. On the other hand, the adenomatous prostate, which often assumes very considerable dimensions, and is best suited for treatment by prostatectomy, presents very different local conditions. When examined by the finger in the rectum, there is a feeling of less fixidity about it relative to the pelvis. The bowel is freely movable over it. Though firm and bossy to the touch, it is wanting in that feeling of stony hardness which is so characteristic of the carcinomatous prostate."

In regard to the frequency of cancer of the prostate, Holmes Greene[18] remarks "It is pretty hard from any statistics at present obtainable, to draw any positive conclusions as to how frequent primary cancer of the prostate really is. This much may be said, however, that it now seems evident that the so-called hypertrophied prostate of the aged is a chronic inflammatory process. It is, therefore, natural to expect cancer to follow in quite a large proportion of such cases, as it follows chronic inflammatory conditions occurring in other portions of the body. Heinemann considers it to occur in 0.4 per cent of all cases of cancer. In Czerny's clinic there were six cases in eight years."

The above statistics are of course fragmentary. Properly to obtain statistics of value, large numbers of prostates have to be examined, and many sections made through each prostate; otherwise a cancer occurring in one lobe might be overlooked, if it was not large enough to make any great difference in the appearance of the gross specimen.

Albarran and Halle having subjected one hundred of the so-called hypertrophied prostates to a most careful examination, found the proportion of cancers to be as high as fourteen out of the hundred. While it seems possible that some of the cases reported by them were not those of true cancer, still the careful reading of their article, giving the details of a most exhaustive examination of the subject, cannot fail to lead one to the conclusion that the proportion of cancers occurring in the so-called hypertrophied prostates is a high one. Greene and Brooks found three cancerous specimens in the examination of fifty-eight enlarged prostates, and, as one of the conclusions in their article, state that cancer of the prostate is of more common occurrence than has been generally supposed to be the case.

The editor is inclined to think it probable, from the foregoing evidence, and from the fact that an increased number of cases are being constantly reported, that cancer occurs in a proportion as high as from 5 to 10 per cent of old men suffering from prostatic diseases.

REFERENCES.—[1]*Med.-Chir. Trans.* vol. lxxxvii, 1904, p. 419; [2]*Med. Press,* March 2, 1904; [3]*Brit. Med. Jour.* Jan. 30, 1904; [4]*Ann. Surg.* Dec. 1903; [5]*Proc. German Surg. Congress,* 1903; [6]*Arch. f. klin. Chir.* Bd. 68, Hft. 4; *Ther. Gaz.* July 15, 1903; [7]*Brit. Med. Jour.* July 4, 1903; [8]*Lancet,* Dec. 5, 1903; [9]*New York Med. Jour.* May 21, 1904; [10]*Lancet,* May 7, 1904; [11]*Brit. Med. Jour.* Jan. 30, 1904; [12]*Med. Rec.* Aug. 15, 1903; [13]*Ann. Surg.* Jan. 1904; [14]*Pract.* p. 157, 1902; [15]*Ann. Surg.* June, 1904; [16]*Bull. et Mém. Soc. de Chir.* No. 21, 1904; [17]*Brit. Med. Jour.* July 4, 1903; [18]*New York Med. Jour.* Oct. 21, 1903.

**PRURITUS.** *Norman Walker, M.D.*

In a clinical lecture Meachen[1] divides the etiological factors into three classes: (1) External causes: (2) Internal causes: (3) Intracutaneous. Apart from local causes he lays great stress on autointoxication, and therefore considers intestinal antiseptics and aperients of great value. As a local application, **Carbolic Acid** is *facile princeps,* and is preferably used as a lotion, ℥i to a pint of water. If erythema be present the parts should be covered with sterilized gauze, or lint soaked in :—

| | | | |
|---|---|---|---|
| ℞ Zinci oxidi | ʒiii | Emuls. amygdal. | ʒii |
| Ac. carbolici | ♏xx | Aq. | ad ℥viii |
| Mucil. acaciæ | ʒii | | |

Among general causes he mentions, polyuria following granular kidney, adenoids, pregnancy, nervous diseases such as locomotor ataxia, and drugs such as alcohol, opium, cocaine, coffee, and arsenic. He points out that those cutaneous eruptions, such as lupus and syphilis, which chiefly affect the corium and not the stratum Malpighii, are generally not itchy. In pruritus senilis, **Cannabis Indica**, given internally in small doses, and the local application of 10 grs. each of **Menthol** and **Oxide of Zinc** in an ounce of lard, are often beneficial.

*Pruritus Ani.*—At the meeting of the British Medical Association,

July, 1904, a discussion on this subject was opened by Malcolm Morris, who limited the condition to the surface of the anus, the mucous membrane for one inch up internally, and the circular band corresponding to the corrugator cutis ani externally. He pointed out its origin from reflex disturbances, digestive troubles, gout, rheumatism, or local lesions. The first essential was to determine the cause and treat it. Bland non-irritating diet, careful regulation of the bowels (aloes specially being harmful), employment of tonics, occasional flushing of the system with mineral waters such as Vichy, are in his opinion the main lines to go upon. Sedatives and narcotics should be prescribed with the greatest caution, and only when clearly indicated; in fact, moral treatment with the idea of diverting the patient's attention was of more benefit. The first essential of local treatment was **absolute Cleanliness,** especially after defæcation, and he recommended washing the parts at night with warm water and coal-tar soap. Hot sitz baths often give relief, but sometimes cold water was more soothing. **Carbolic** and **Tar Lotions** were beneficial, but ½-gr. **Cocaine Suppositories** gave him the most satisfactory results. He had found great benefit from local pressure properly applied in the form of bone plug with a shield. Small local ulcers should be excised or cauterized. There is in his opinion not a little danger of over-treatment, and every case has to be treated with tact and perseverance.

Radcliffe Crocker[2] regarded disorders of the liver as the commonest cause in middle age. Locally he preferred ointments, with strong pressure and massage of the parts. Cocaine in his opinion was liable to set up eczema. Freeman strongly advised forcible **Dilatation** of the sphincter. Gilchrist advised **X-rays,** and Pernet mentioned a case where **Cycling** had done good.

Johns[3] obtains his best results by washing after each evacuation, drying with absorbent cotton wool, and applying about 20 grs. of **Calomel** with the fingers. **Epsom Salts** is given internally. Cases lasting for forty years have been cured by this plan.

References.—[1]*Clin. Jour.* Dec. 9, 1903; [2]*Brit. Med. Assoc.* 1904; [3]*Ther. Gaz.* May 15, 1903.

**PSORIASIS.** *Norman Walker, M.D.*

After pointing out the disadvantages of chrysarobin and pyrogallic acid, Herxheimer[1] states that he was led to try the effect of **Oxidation,** and chose **Peroxide of Zinc,** using a 10 per cent ointment in vaselin. He records that 16 out of 30 out-patients were cured, while of 6 in-patients 3 were cured and 3 improved. The average duration of out-patients' treatment was three months. Sometimes 50 per cent of **Lithanthrol,** a new tar preparation, was combined with the above. **Arsenic** he insists must never be neglected in suitable cases, and as some of those mentioned also got arsenic, his results are not absolutely conclusive.

Dremow recommends the following ointment :—

| | | | |
|---|---|---|---|
| ℞ Acid. salicyl. | 10 | Saponis viridis | |
| Chrysarobin | | Vaselini | āā 25 |
| Ol. rusci | āā 20 | | |

This is rubbed into the patches night and morning for four to six days, and after each application **Starch** or **Zinc Powder** is dusted on. After this comes an interval of one to three days, during which a daily bath and vaselin only are used.

References.—[1]*Deut. Med. Woch.* Jan. 28. 1904 ; [2]*Münch. Med. Woch.* May 17, 1904.

**PTOSIS.** (*See* Eyelids.)

**PULSE, (Abnormalities of)** *Prof. A. H. Carter, M.D., F.R.C.P.*

*Pulsus Paradoxus.*—Niegel[1] expresses his opinion that this variety of pulse is not confined to chronic mediastinitis, but may occur under two other conditions : (*a*) In cases of difficult entrance of air into the chest, as in laryngeal or tracheal stenosis ; and (*b*) In certain cases of diminished resistance on the part of the heart-wall. In the former it is due to increased negative pressure upon the heart and thoracic vessels ; in the latter to the direct effect upon the weakened heart in such a way as to inhibit its action during inspiration.

Mackenzie[2], in a careful paper, seeks to explain that most puzzling of all the forms of irregularity of the heart, where the heart is never regular in its action, where seldom or never two beats of the same character follow one another. Many names have been applied to this condition, such as delirium cordis, the mitral pulse, pulsus irregularis perpetuus, a heart irregular through loss of vagus control, etc. As the result of a study of a large number of cases where a jugular pulse was present, he has been able to establish the fact that the cause of the irregularity is due to the rhythm of the heart proceeding from the ventricles, and not, as normally, from the great veins as they debouch into the auricles. He is also convinced that in all other cases of continued irregularity where there is no jugular pulse to explain matters, (as in old people and others who suffer from attacks of palpitation with irregular action of the heart) the same cause is at work, not only because of similarity in type, but because in such people there is a great tendency to extra-systole of the ventricles—a condition which, as will be seen, often precedes the continuous irregularity. (*See also* Tachycardia, and Stokes-Adams' Disease).

References.—[1]*Brit. Med. Jour.* July 4, 1903 ; [2]*Ibid,* Mar. 5, 1904.

**QUADRICEPS, Rupture of.** (*See* Fracture.)

**RECTUM.** (*See also* Anus.) *P. Lockhart Mummery, F.R.C.S.*

*Treatment of Hæmorrhoids.*—Marmaduke Sheild[1] points out the importance of a careful examination, not only of the rectum, but also of the patient generally, in all cases of hæmorrhoids, before deciding

as to the best form of treatment. He favours the operation by **Ligature** as still being the safest and most effective treatment.

Downes[2], of Philadelphia, describes a new form of **Electro-thermic Angeiotribe** for the removal of hæmorrhoids. This instrument has two blades a $\frac{1}{4}$ of an inch wide, one of which has a heating chamber containing a strip of iridio-platinum heated by the electric current from a cable attached to the base of the blades. The pile is grasped tightly between the blades, and the current turned on for about thirty seconds. A special form of shield is used to protect the surrounding mucous membrane. Before removing the angeiotribe, the pile is trimmed off with a knife. The remains of the pile after this operation look like a thin, white ribbon. It is claimed for this method that it is superior to the use of the old clamp and cautery, as it does not burn or carbonize the tissues, and is much cleaner, while the hæmostasis is more perfect and healing more rapid.

*Operative Treatment of Constipation.*—Gant[3], in a paper on this subject, states that **Valvotomy**, or division of Houston's valves in the rectum, is indicated in some chronic cases of constipation. He describes a method of performing this operation by means of special clamps which are applied to the valves and allowed to cut their way out. Kelsey[4] rightly points out that it is quite an unproved assumption that Houston's valves have any relation to the cause of constipation.

Arbuthnot Lane[5] is of opinion that many cases of obstinate constipation of old standing are due to the formation of adhesions binding down the large intestine. Finding that simple division of these adhesions did not give satisfactory results, he advises **Short-circuiting** the whole of the large intestine by anastomosing the end of the small ntestine to the upper part of the rectum, and then dividing the ileum between the seat of anastomosis and the cæcum. He gives several cases in which this procedure proved satisfactory.

Von Noorden, on the other hand, claims that by putting such patients upon a **Diet** leaving a large proportion of indigestible residue. and at the same time giving them sufficient fat to render the fæces soft and unirritating, a cure can be effected in the great majority of cases. During the early stages of the dietetic treatment, **Abdominal Massage** is used to prevent undue accumulation of fæcal material. An essential part of the treatment is to stop the use of all aperients. [In one case in which separation of adhesions binding down the large intestine had failed to cure a case of chronic and obstinate constipation. I put the patient upon von Noorden's diet with complete success. I have seen several cases of chronic colitis accompanied by obstinate constipation, where a cure has followed the use of von Noorden's diet. and it should certainly be tried before resorting to such a drastic measure as ileo-rectal anastomosis.—Ed.]

References.—[1]*Clin. Jour.* Feb. 3, 1904; [2]*New York Med. Jour.* Oct. 10, 1903; [3]*Med. Rec.* Oct. 24, 1903; [4]*New York Med. Jour.* July 25, 1903; [5]*Clin. Jour.* Jan. 20, 1904.

**RECTUM (Cancer of).** *P. Lockhart Mummery, F.R.C.S.*

Diagnosis.—The accurate diagnosis of tumours in the upper rectum and sigmoid flexure has hitherto been difficult and unsatisfactory. This is principally because it has not been possible to obtain direct evidence of their presence in these regions, and the diagnosis of such tumours has in most cases had to be made almost entirely from the symptoms. The only method of obtaining exact knowledge of such tumours hitherto has been by performing an exploratory laparotomy. Several forms of sigmoidoscope tube have been invented to enable such growths to be examined per rectum, but many of them have proved unsatisfactory in practice. H. Strauss[1] has described a new form of pneumatic sigmoidoscope or proctoscope, which is a great improvement upon the earlier instruments. It consists of a tube 30 cms. long, containing an electric lamp so situated that it cannot easily be soiled by intestinal contents. The tube is closed at the back by a glass window, and there is an arrangement by which air can be pumped into the tube in order to inflate the rectum. The outside of the tube is graduated so that its depth of introduction can be seen at a glance. The instrument is passed with the patient in the knee-elbow position, but in women the Sims position can be used. No anæsthetic is necessary, though cocainization of the anus is often useful. In experienced hands the instrument is perfectly safe. [I have elsewhere[2] described this instrument and the method of using it; a drawing of it, and of two growths in the sigmoid flexure seen through it, are also given.] It is possible with this instrument to examine the whole of the rectum and the greater part of the sigmoid flexure, and if a neoplasm is present, not only to detect it, but to ascertain its mobility and size. This instrument should entirely do away with the necessity for exploratory laparotomy in the diagnosis of tumours in the upper part of the rectum and sigmoid flexure.

Rosenheim[3] emphasizes the importance of a bi-manual examination in the diagnosis of tumours situated high up in the rectum.

Treatment.—A great deal has been done during the last year to improve the technique of excision of the rectum for cancer. The chief aim has been to obtain a method of operating which will ensure aseptic healing in the wound, and at the same time allow the proximal end of the bowel to be brought down to the anus so as to restore the rectal canal. James Tuttle, of New York[4], points out the unsatisfactory results of simple **Colotomy** in the treatment of rectal cancer. He gives the results of 43 cases of **Complete Excision**, and says: "The average prolongation of life is from six months to three years, greater after excision than after colotomy." Of his 43 cases of excision, 12 were failures; of the remainder, 16 had survived the operation for two years, 1 for eleven years, 1 for ten years, 1 for nine years, 1 for seven years, and the rest for varying periods over two years. Seven cases

could not be traced. He considers that the chief risk of the operation is infection of the wound and fatal sepsis.

A successful case of excision of the rectum by the abdomino-perineal route is reported by Louisa Aldrich-Blake[5]. The method adopted was a modification of that described by Sir Chas. Ball in his Erasmus Wilson Lectures last year. A successful case of excision by the abdomino-perineal route is also reported by Vincent[6], of Algiers.

References.—[1]*Med. Rec.* Dec. 26, 1903; [2]*Lancet,* June 5, 1904; [3]*Med. Chron.* May, 1904; [4]*New York State Med. Assoc.* Oct. 19, 22, 1903; [5]*Brit. Med. Jour.* Dec. 19, 1903; [6]*Med. Press,* April 6, 1904.

**RETINITIS AND CHOROIDITIS.** *A. Hugh Thompson, M.D.*

Nettleship[1] has some interesting remarks on *choroiditis.* The choroid and the outer layers of the retina derive their blood supply from the short posterior ciliary arteries. This leads him to suspect that central senile choroido-retinal disease in its various manifestations is grounded chiefly on disease of one or more of these arteries. This would explain, on the one hand, why the disease is a senile one, for it is generally the old who are subject to chronic arterial degeneration; and, on the other hand, it would explain why it is strictly limited to the central parts of the fundus, differing radically in this respect from those kinds of choroiditis that are due to blood state. On the other hand, in the case of retinitis pigmentosa (a disease which, according to recent views, takes its origin in the choroid), and also in certain forms of syphilitic retino-choroiditis, the region most affected is that of the equator, a ring scotoma sometimes being the result. This circumstance is to be considered in relation to the fact that the equatorial region is that where the terminal twigs of the anterior and the posterior ciliary arteries meet, and which is not very efficiently served by either, so that any defect in the function of either would here make itself first felt.

In another article (in the same volume) the same author remarks that he has gradually come to attribute greater influence to fatigue and overwork, local and general, than to more directly mechanical agencies, in the production of intra-ocular hæmorrhage and even detachment of the retina. Too much attention is usually paid in these diseases, he implies, to mechanical causes affecting the blood supply, and too little to physiological congestion from over use.

In Part IV. of the same volume the same author contributes some valuable observations on *renal retinitis.* Two factors are generally present in the production of this disease—a morbid state of the blood, and a diseased condition of the walls of the retinal arteries. The blood state is the chief cause in the severe acute cases; in many of the less acute, arterial disease is the main factor. In some cases with typical retinitis, hæmorrhages, and white patches, no albumin is found. There are others in which the only ophthalmoscopic appearances are hyaline thickening of the coats of the retinal

arteries, as evidenced by an exaggeration of the central light streak and compression of the veins where they are crossed (Gunn's "silver wire arteries"). In these last cases there may or may not be albumin. If not, the question arises, are we justified in suspecting an early stage of chronic renal disease? According to Nettleship we are, more especially if the patient is comparatively young. In patients past middle age the condition is so very common that less importance need be attached to it.

In the same paper, an interesting plate illustrates the two sorts of exudation that occur in renal retinitis. The first are found in the nerve-fibre layer, occur early in the disease, and soon clear up; they appear to the ophthalmoscope as white or greyish white patches with ill-defined "woolly" margin in the region of the optic disc. The second, found in the inter-granular layer, give rise to the well-known radiating figure round the macula, composed of glistening dots, sharply defined, but which may become confluent. They are not present in the earliest stage of the disease.

REFERENCE.—[1]*Roy. London Ophth. Hosp. Rep.* Oct. 1903.

**RHEUMATIC FEVER.** *Robt. Hutchison, M.D.*

ETIOLOGY.—Philipp[1] records the result of his examination of 26 cases of acute rheumatism, 24 of which were quite typical. He calls attention to the need for accurate diagnosis, and holds that many of the cases upon which bacteriological reports have been written were really of a septic nature. He gives two examples within his own experience in which the septic cause was only detected after death. Of his own patients the blood was examined in 21, and the joint fluid in 6 cases. Cultures were made upon some twenty solid and liquid media, and inoculations into guinea-pigs, rabbits, dogs, and monkeys. In not a single instance was there any growth of micro-organisms, even when the joint exudation was full of fibrinous clot and leucocytes; nor did any of the animals suffer, with the exception of a calf, which for a day or so after the injection of fluid from a rheumatic knee, had a little fever, and some limping of the near hind leg. In this case no joint swelling occurred, and the animal soon recovered completely. Cultures and animal experiments from a fatal case of acute pericarditis complicating mitral regurgitation of rheumatic origin also failed, as did similar attempts with the fluid from joints attacked by chronic rheumatism. The author summarizes his results thus: In acute rheumatism neither the circulation nor the joint fluid contains any micro-organisms which are demonstrable by ordinary bacteriological methods, or can be successfully inoculated into guinea-pigs, rabbits, or monkeys. Calves, however, appear to be in some degree susceptible to the specific virus. The nature of this virus must, however, in the author's opinion, still be admitted to be unknown.

Poynton[2] has published another fatal case of rheumatism with

endocarditis, in which he was able to obtain from the vegetations on the mitral valve and from the kidney and spleen, pure cultures of a diplococcus, resembling that which he has already described as the probable cause of acute rheumatism (*see Medical Annual*, 1902). The same organism, contaminated with others, was obtained from the lungs. With one of the pure cultures Dr. V. Shaw produced, both in rabbits and monkeys, arthritis, endocarditis, and pericarditis. Poynton regards this case as affording striking confirmation of the infective nature of rheumatic fever.

Dr. Sydney Hawthorne[3] has published a remarkable series of five cases of acute rheumatism which occurred at intervals of from a few days to one week of each other, in the same house, and which tend to bear out the view that rheumatism may sometimes be due to direct infection. For details see the original paper.

Dr. Carey Coombs[4], in a study of the clinical aspects of the rheumatic infection, contends that clinically there are certain characteristics of rheumatic infection and its results, whether the infection be of joints, of heart, or of brain. These characteristics are, two extremes of severity, transient and malignant; and between these extremes a complete gradation of protracted cases in which an imperfect resistance on the part of the infected organ or tissue leads to connective tissue increase, of permanent and crippling nature. These protracted forms are punctuated by more or less frequent exacerbations. He suggests that in many cases of rheumatic infection the organism persists in the infected tissue, after all obviously inflammatory signs and symptoms have disappeared, in a comparatively but not absolutely harmless state, capable of re-exaltation of virulence in favourable circumstances. He sums up the facts which form the basis of this hypothesis as follows :—

1. It is common to see a woman thirty-five years of age with mitral stenosis, who has had rheumatic fever at fifteen or twenty years of age without recurrence. The symptoms of cardiac disease begin some years after the arthritis. Necropsy shows extreme fibrosis of the mitral curtains. Now it is hardly likely that the rheumatic fever laid down, so to speak, a definite dose of fibrosis, the great increase of which is to be ascribed solely to the restlessness of the valves and the mechanical strain to which they are subjected. It is more satisfactory to postulate chronic irritation of the valves by organisms of lowered virulence persisting therein.

2. A case of the above nature sometimes blazes forth into a state of malignant endocarditis. This is usually ascribed to reinfection of previously scarred valves. The following case suggests rather that organisms persist in the fibrous valve, and under conditions lowering the patient's resistance, undergo exaltation of virulence with malignant results. A female, aged twenty years, who had had cardiac symptoms for twelve years, was admitted to St. Mary's Hospital under the care

of Dr. Lees, after a fortnight's illness. She had had rheumatism and chorea, but not recently. Up to admission she was suckling her first child. She was very pale and weak. The physical signs were those of mitral stenosis, but her symptoms were graver than the signs, and there was irregular pyrexia with wide daily excursions. The *post-mortem* examination showed infarcts of the lung, the spleen, and the kidneys, without suppuration; recent and old pericarditis, slight in degree; old mitral stenosis with massive vegetations on mitral and aortic valves, chordæ tendineæ, and left auricular wall. These vegetations contained swarms of micrococci, apparently corresponding to the micrococcus rheumaticus as it is described by the authorities mentioned above.

3. Relapse is common in rheumatic fever, commoner even than in enteric fever, occurring in about 20 per cent of all cases.

4. Rheumatic affections tend also to recur at intervals too long to allow them to be called relapses. Thus, a youth aged nineteen years, with acute rheumatic arthritis and aortic incompetence, had had rheumatic fever when he was twelve years old, and chorea a few months later. At thirteen years of age he again had rheumatic fever, and his heart was affected. At the ages of fourteen and sixteen years he had further attacks, and several milder attacks between the ages of sixteen and nineteen years. If this kind of story be due to repeated reinfection it is without parallel (not excepting lobar pneumonia) among microbic diseases.

5. The prolonged course of chorea and of endo-pericarditis in childhood, shows at any rate a persistence of rheumatic infection over a period of months. In the same connection a case described earlier in this paper is recalled, where a patient was for two years almost continuously disabled by waxing and waning arthritis.

6. Analogy is a much-abused form of support for theories, but it seems legitimate to draw attention to the many infections which are capable, and often convicted, of latency: to name only a few, tuberculosis with its quiescent foci ready to flare up at a favourable opportunity; the extraordinary persistence of bacillus typhosus in bone lesions; of bacillus coli in the liver, gall-bladder, etc.; of staphylococci in bone-marrow, and so on. If all these organisms can remain latent, re-asserting themselves as soon as they get the chance, why should the micrococcus rheumaticus be held to differ from them in this respect?

Symptoms.—Amongst the minor symptoms of acute rheumatism in childhood, Pearson[5] draws attention to the frequency of abdominal pain. The pain is nearly always situated about the upper half of the abdomen, starting from a point a little below the costal margin close to the mid-clavicular line, and running from there either towards the umbilicus, or straight across the epigastrium. It may be either unilateral or bilateral. It is not a superficial pain, but is invariably said to be "inside," but does not go through to the back nor travel

round the trunk. It is often quite sharp, and may recur in paroxysms which are usually brought on by muscular exertion or excitement. The pain is not accompanied by any gastric or intestinal symptoms. The attacks are relieved by ordinary anti-rheumatic treatment, and this fact may be of help in diagnosis.

Treatment.—Mackey[6] draws attention to the value of **Aspirin** in the treatment of acute rheumatism, and summarizes its advantages as follows: (1) Its slightly acidulous, pleasant taste; (2) Slight or non-decomposition in the gastric juice, so that it passes, without causing nausea or irritation of the stomach, into the intestine, from which the active acid is absorbed; (3) Consequent probably on differences in absorption and elimination, there is much less liability to head symptoms; and (4) Less cardiac depression, so that although it lowers the pulse with the temperature, it can be continued more steadily and with less anxiety than the soda salt. It relieves pain and pyrexia quite as well, if not better, but does not cause such copious sweating, although such effect is well enough marked after full doses.

Schäfer[7] has made a series of observations on the results of treatment of acute rheumatism with **Menzer's Anti-Streptococcic Serum.** The object has been to ascertain if the treatment is practical and available, apart from theoretical considerations. The history of cases is recorded *in extenso*, the only treatment made use of being that of the serum in question. Two questions arise: (1) Is the treatment by the use of Menzer's anti-streptococcic serum superior to that by the usual modes of treatment? (2) Is it possible that the serum exerts a specific influence on the morbid process? The number of cases in which the treatment has been adopted is yet too small to permit a definite answer being given to the first question, but the author states that the attack of rheumatism when thus treated was of shorter duration than the previous ones, and also the disappearance of the fever left the patient in a stronger and better condition than the previous occasions. The author refers, of course, to those cases in which previous severe attacks of acute rheumatism had been passed through. By this mode of treatment the risk of upsetting the stomach by drugs is avoided, and, as the treatment itself appears to be devoid of harmful results, it merits further trial. As regards the specific nature of the treatment, the author, owing to the scantiness of the material, does not express a definite opinion—at all events, as regards the tendency to endocarditis. Yet in one of the cases a decided improvement, both subjective and objective, as regards the heart condition, was observed.

Schmidt[8] also has treated fifteen cases of rheumatism that had resisted all other measures, with Menzer's serum. Of these, six showed distinct improvement; in four the results were doubtful; in five there was no change. His conclusion is that the serum is not a specific one in the same sense as that of diphtheria is; but that it is impossible to deny that in some cases it does produce favourable results. This

is especially true of the subacute cases; in the acute and chronic stages it is without effect. It should only be employed after the usual methods have been found ineffectual.

REFERENCES.—[1]*Deut. Arch. f. klin. Med.* 76, parts 1–3 (Abst. in *Brit. Med Jour.* Aug. 29, 1903); [2]*Brit. Med. Jour.* May 14, 1904; [3]*Ibid*, Dec. 26, 1903; [4]*Lancet*, Feb. 27, 1904; [5]*Brit. Med. Jour.* May 14, 1904; [6]*Lancet*, Nov. 7, 1903; [7]*Ther. der Gegenw.* March, 1904 (Abst. in *Treatment*, May, 1904); [8]*Berlin. klin. Woch.* Dec. 7, 1903.

**RHEUMATISM (Chronic).** *Robt. Hutchison, M.D.*

Stockman[1] points out that acute rheumatism and the so-called "chronic rheumatism" are really totally distinct conditions, and that acute rheumatism never becomes truly chronic any more than, say, enteric fever. It is now recognized that the articular structures proper, cartilage, synovial membrane, bone, are not primarily affected in chronic rheumatism, but that the parts implicated are the fibrous ligaments of the joints, and more especially, the fibrous tissues of the muscles and bones. The lesion in the fibrous tissue consists in patches of inflammation and hyperplasia, either in patches or widely spread throughout the body.

If these swellings are at all superficial they can be very distinctly felt, and are usually painful on pressure. The commonest situations for them are in the lumbar aponeurosis, calves, fascia lata and tendinous expansions of the thigh muscles, the trapezius, deltoid, inner border of biceps, intercostal muscles, the glutei, and the soles of the feet. The fibrous tissue of the neck of the bladder, of the pharynx, behind the sternum, all along the spinal column, and in the joints may also be affected. When these local indurations swell up—as they do from various causes—there follows local tension, with pressure on the filaments of sensory nerves. This gives rise to almost continual aching pain, and a sense of muscular fatigue. Sudden muscular movement, by increasing the tension, or exerting pressure on the swollen tissue, often greatly aggravates the pain or causes it to shoot excruciatingly. Owing to the implication of sensory nerves, the aching and pain may often radiate over a wide area; hence also the numbness, tingling, and prickling which are common symptoms of chronic rheumatism.

TREATMENT.—During an acute exacerbation, when the indurations swell up and cause pain and aching, relief may be given by **Hot Baths, Massage, Phenacetin, Dover's Powder, Sodium Salicylate,** the local application of **Methyl Salicylate,** and similar measures. But the relief thus afforded is only temporary, and often in a few hours, or as soon as treatment is stopped, the pains return, to continue for days, weeks, or indefinitely, and the patient remains as before, liable to renewed attacks on every exposure to cold, wet, or fatigue. To obtain permanent cure and complete relief from the recurrent attacks, the fibrous indurations must be completely dispersed, and in all but quite recent cases this is always a more or less tedious and troublesome procedure.

The only means of any special and definite value in this respect are **Massage** and **Exercise**, the **Faradic Current**, and the injection of solution of **Chromic Acid** into any of the fibrous indurations which are sufficiently large and defined to allow of this being done.

Of the three, **Massage** is the most efficacious. General massage is of no use. It must be specially directed to any nodules or thickenings which can be felt. At first they are often too tender to be rubbed with much pressure, but gradually they become more callous and more fibrous, and may then be more vigorously treated. A good deal of experience and skill is required during the early treatment, but after they begin to shrink in size, the knuckles and fists may be used for rubbing, and ultimately they disappear. The massage should be carried out daily, ten or fifteen minutes being devoted to each part. To obtain satisfactory cure, the dispersion of all the indurations must be complete, otherwise relapses occur, and are a source of much disappointment. The length of time required to do this varies very much. Recent soft swellings may disappear in two or three weeks, but when the indurations are old and widely spread, three to six or twelve months may be required.

**Exercises** calculated to stretch the aponeuroses and muscles involved, are of value in hastening and completing the cure. A stick, dumbbells, Indian clubs, Sandow's exerciser, may all be called into requisition.

The **Faradic Current** should be applied over each region for five to ten minutes daily. It has some effect in causing shrinkage of the swollen fibrous tissue.

The **Injection of Chromic Acid** is only possible where the nodule is sharply defined, and can be penetrated accurately by the hypodermic needle. Superficial nodules should never be treated in this way, as the solution is apt to damage the skin and cause a phlegmon. Ten minims or less, of a 1 per cent solution in water, may be given. It may cause some aching, but if the nodule has been accurately injected, shrinking, with great relief to the rheumatic pain, follows.

*Drugs.*—Where intestinal indigestion is present, and especially in lumbago, a course of **Mild Purging** (grey powder, compound rhubarb powder, salines) is advisable. As regards specific remedies, it cannot be said that any are known which cause absorption of the fibrous indurations. In quite recent cases **Potasssium Iodide** may give relief, but in regularly chronic cases any benefit is not very apparent. **Salicylic** compounds lessen pain during the exacerbations. Their action is not curative, however, as they cannot be expected to remove hard fibrous tissue. The same is true of phenacetin, phenazone, quinine, and all similar compounds. Alkalies, ammonium chloride, colchicum, guaiacum, actæa racemosa do no good. **Iodine** and **local Blistering** are helpful, especially over joints or nerves.

*Spa Treatment.*—Recent cases, where the fibrous thickenings are in the early stage and still plastic, may be cured by a course of hydro-

therapy, but inveterate cases only obtain temporary relief from their sufferings. The drinking, bathing, and general massage promote absorption of the serous exudation in the fibrous tissue, and possibly some shrinking. This usually gives, for a time, complete relief to the pain, aching, and stiffness of chronic cases, so that the patient feels much more happy and energetic. The indurations still remain, however, and are apt to swell and give trouble under the influence of exciting causes. The regular purgation obtained at Harrogate by the sulphur water, improves intestinal digestion, and does much good in certain cases.

*Diet.*—The broad rule is to avoid gastro-intestinal fermentation, and the consequent absorption of irritant products from the bowel. Indigestion certainly causes aching in many rheumatic subjects, and the best way to avoid it is to eat plainly but sufficiently of an ordinary mixed diet. Any articles which are well and easily digested by the individual, may be allowed.

*Climate.*—Residence in a dry stimulating climate often brings about spontaneous cure. A damp atmosphere and a seaside climate increase the symptoms, and seem to favour the conditions which give rise to chronic rheumatism.

*Surgical Treatment.*—Certain nodules after prolonged massage remain very hard, and refuse to be dispersed. If they cause pain and aching, they can be removed surgically. **Removal** gives complete relief. It is sometimes not an easy operation, as the small mass of fibrous tissue often lies deep, and may be difficult to find.

REFERENCE.—[1]*Brit. Med. Jour.* Feb. 27, 1904.

**RHEUMATOID ARTHRITIS.** *Robt. Hutchison, M.D.*

ETIOLOGY.—Edsall and Lavenson[1] have investigated the possibility, suggested chiefly by Poncet, that some of the chronic affections of joints usually spoken of as rheumatoid arthritis, arthritis deformans, or chronic rheumatism, may be of tubercular origin. By the use of **Tuberculin** in 18 cases, including arthritis deformans and chronic rheumatism, results were obtained suggestive of the fact that tuberculosis was the cause in several instances. The frequent occurrence of pulmonary tuberculosis in the subjects of chronic polyarthritis, and the family history of such cases, together with several instances in which injections of fluid from such joints produced tuberculosis in guinea-pigs, point to the existence of certain relations between joint tuberculosis and chronic polyarthritis. In a series of skiagraphs obtained by other observers, the characteristic points of rarefaction in the ends of the bones were considered as being identical with the condition found in tuberculosis of the epiphyses.

In one case—an instance of Still's type of chronic polyarthritis associated with marked glandular and splenic enlargement—intense local symptoms in the joints followed tuberculin injections. From the further fact that the glandular enlargement, both in its situation and progress, was in apparent relation with, and followed the onset of, the

joint disease, it was inferred that the latter condition was in close causative relation with the glandular enlargement, and that the same factor produced both. From this and other cases examined, it seems probable that many cases of chronic polyarthritis of the type described by Still may constitute a peculiar form of tuberculosis of the joints; and if this be so the virulence of the affection would appear to be of a lower degree than ordinary joint or bone tuberculosis. In three other cases the effect of tuberculin was definite in its reaction, either by the production of fever, or by setting up marked pain and tenderness in the joints. The reactions in the other cases cannot be regarded as of the same importance from the point of view under consideration, since the existence of pulmonary mischief or the absence of joint symptoms negatived their value in this respect.

Although healthy joints may become painful after tuberculin injections, thus showing that the development of a tuberculin reaction in chronic joint disease must not be regarded as conclusive, the authors consider that their observations in one marked instance point to the possibility of the reactions in the remaining cases being due to tuberculosis of the joints. The value of deductions from X-ray pictures is questionable, as it is exceedingly doubtful how much reliance can be placed upon such methods for a final proof of the presence of tuberculosis in bone.

Treatment.—In the acute stage McCrae[2] relies upon **Rest. Salicylates** are of little use, but **Antipyrine** in 5-grain doses is often effectual. **Guaiacol** is highly recommended by some. Locally the use of an **Ice-bag, Cold Compresses,** or **Hot-air Baking,** or the application of **Lead and Opium Lotion,** or of **Oil of Winter Green,** gives relief.

After the acute stage has subsided, the great principle of treatment is to maintain the patient's nutrition. The diet is too often reduced under the mistaken impression that such cases are rheumatic or gouty. Any disorder of the stomach or bowels should be remedied, and carious teeth or pyorrhœa must receive attention. **Massage** is the most useful local treatment, but **Hot-Air Baths** are of help if not prolonged for more than thirty minutes. The more the joints are used the better. Patience and perseverance are the keynotes of treatment.

Peckham[3] reports some very successful results in osteo-arthritis affecting one joint (mostly the hip), from the use of superficial **Cauterization** in the neighbourhood of the joint, along with **Blistering.** He applies the superficial cautery once a month, and blisters at shorter intervals. This treatment was persisted in for a year in some of his cases.

References.—[1]*Amer. Jour. Med. Sci.* Dec. 1903; *Brit. Med. Jour.* Feb. 27, 1904; [2]*Jour. Amer. Med. Assoc.* Jan. 9, 1904; [3]*Ther. Gaz.* Sept. 15, 1903.

**RHINITIS (Chronic Atrophic).** *P. Watson Williams, M.D.*

Treatment.—While nothing of importance has been added to our knowledge of the causes of atrophic rhinitis, further reports on the results of **Paraffin Injections** point to the utility of this method. Fliess[1]

states that he has obtained more relief in twelve cases treated by this means than he has observed following any other form of treatment. After careful cleansing of the nasal cavity, it is cocainized, and the syringe with a bayonet-shaped long needle having been previously prepared and filled, is made to inject the paraffin into the parts of the lower turbinate that show most atrophy. If the lumen is still too large, a little paraffin may be injected into the septum also He uses paraffin with a melting point of 50 to 52° C. to avoid all risk of embolism.

Freer[2] recommends irrigation with a solution of **Potassium Permanganate** ($\frac{1}{8}$ to $\frac{1}{2}$ gr. ad $\overline{3}$jss), the crust having been previously removed by using Gottstein's plugs. He also found the permanganate spray (4 to 8 grs. ad fl. $\overline{3}$j) effective for the laryngeal and tracheal extension of the disease. These methods of keeping the nasal cavity clean will in many cases lead to a gradual lessening of the formation of scabs, the patient needing to wash out his nose at rarer and rarer intervals ; and complete recoveries have been produced in the course of a few years, even in young persons.

But for obstinate cases he recommends recourse to the **Copper Electrolysis** method. He makes a new suggestion in its application by probe-shaped electrodes instead of needles, or as he terms it, surface electrolysis ; the negative pole, of any metal, being wrapped in moist cotton-wool and inserted in one nostril, while the positive pole, a large copper probe, is moved about over the mucosa of the other naris. The current strength is from three to ten milliampères, and the duration of each application about five minutes. It is much simpler and less painful than the needle method.

Lambert Lack[3] strongly commends a modification of Gottstein's gauze method. The nasal passage on either side is packed with a strip of **Cyanide Gauze** an inch wide. The result is that the discharge remains fluid, the nose no longer fills with tenacious crusts, and can be quite easily cleansed by simple syringing. It is a painless method that can easily be carried out by the patient, and the gauze should be worn continuously, being only removed for syringing twice daily ; and after the discharge has ceased, in from three to six months, the gauze may be tentatively omitted, the daily syringing being continued ; for though the nose, if cured, is a dry nose, it tends to collect dust and mucus.

References.—[1]*Berl. klin. Woch.* March 7, 1904 ; [2]*Phys. and Surg.* Feb. 1904 ; [3]*Clin. Jour.* Dec. 23, 1903.

**RICKETS.** *G. F. Still, M.D.*

Etiology.—This has recently been discussed by Freeman[1], who summarizes the experimental work which has been done. He points out that rickets is not merely a disease of bones ; it affects also the ligaments, muscles, nervous system, and mucous membranes. The view of Parrot that rickets is due to syphilis is put aside as untenable ;

climate, on the other hand, is probably an important factor, as rickets is almost unknown in hot climates, perhaps because in those countries people live more in the open air. Freeman, however, does not believe that cold climate, and the bad air of closed rooms, are in themselves sufficient to produce rickets. Investigation of the various chemical theories which have been put forward to explain the disease shows that none are wholly satisfactory, and amid a mass of conflicting experimental evidence, the only positive results of importance would seem to be those of Bland Sutton, who found that monkeys fed on vegetables and fruit became rickety, and that young bears fed on rice, biscuits, and raw meat developed severe rickets, as lion cubs also had done; moreover, that rickets could be prevented in the lion cubs by a diet of milk, powdered bone, and cod-liver oil in addition to the meat; experiments which seem to show that a diet containing too little fat, or too much starch, may produce rickets. A single positive result was obtained by Spellman from the injection of extracts of diarrhœal stools from rachetic infants into a rabbit, but no confirmation of this is forthcoming. Monpurgo is said to have produced typical rickets by injecting into young rats a pathogenic diplococcus, but this also lacks confirmation.

An important fact in the investigation is the occurrence of rickets in breast-fed infants. Pfeiffer made 17 analyses of mother's milk in 8 such cases, but without finding any chemical difference from breast milk which had not produced rickets, unless a diminution of the amount of phosphoric acid present in some samples may be of any importance; this, however, was not constant. Freeman records some clinical observations which showed that infants bottle-fed in tenement houses in New York, showed less rickets than infants in an institution where they were partially breast-fed, but received also condensed milk with bread crumbs, between the ages of three and six months.

Symptoms.—A symptom which, although not generally mentioned in text-books, is certainly very common, is the separation of the recti abdominis muscles, which in certain positions of the body allows the abdominal contents to bulge forward here between the recti in the mid-line. This has been described by Francine[2] as "diastasis of the recti muscles"; he found it present in 7 out of 10 cases. This appears as an early symptom, sometimes as soon as the fifth month, and it is suggested, may be of some value in diagnosis. It is slow to disappear, being one of the last of the rickety changes to go. It depends partly on the lack of muscular tonicity, which is a feature of rickets, and partly on the abdominal distention, which is so often associated with this disease. A bony affection which has recently attracted attention in rickets, is enlargement of the phalanges of fingers and toes. According to Sobel[3], who reports two cases in which this was well marked, the thickening does not necessarily affect all the phalanges. It gives rise in some cases to a spindle-shape of the fingers, so that rickets can be

diagnosed at a glance; the thickening affects the middle portion of the bone, not the articular ends; it is shown by radiography to be due to periosteal change.

It may be doubted whether rickets plays any part in the production of *feeble-mindedness*, but in the opinion of Bourneville and Lemaire[4] there is some connection between these conditions.

The relation of *tetany* to rickets is well recognized, and nothing can be simpler than its treatment. After a few doses of **Bromide** and the correction of diet, the tetany in most cases speedily subsides, and even in the less simple cases the contractions of the hands and feet are little more than an inconvenience, which passes off gradually without doing any harm. It is difficult, therefore, to conceive the attitude of mind which can justify lumbar puncture for tetany. But four French observers[5] have recently inflicted this treatment on several children, and have satisfied themselves that the cerebrospinal fluid was normal.

TREATMENT.—From what has been said of the etiology of rickets, it will be seen that sufficient *fat* in the diet is of importance, not only in prophylaxis, but also in treatment; and where this cannot be obtained in the form of milk or cream, it has long been the custom to supply it as **Cod-liver Oil**. It is noteworthy also that many of those observers who have spoken highly of phosphorus in the treatment of rickets, are in the habit of giving it in oil. Fedele[6] reports cases in which great improvement followed the use of **Phosphorus**, which, he considers, neutralizes the toxic substances on which the manifestations of rickets depend. He gives $\frac{1}{200}$th gr. of phosphorus, dissolved in a teaspoonful of almond oil or cod-liver oil, twice a day. Concetti[7], however, declares that the result is due to the phosphorus, not to the oil, for he says cod-liver oil alone has been given in much larger doses, without the rapid results that can be obtained with phosphorus. It is true that in some cases poisoning has occurred from this use of phosphorus, but Concetti states that this is due to faulty methods of administration; the phosphorus gradually sinks to the bottom of the bottle, so that the last doses contain poisonous quantities of the drug: even so simple a plan as thoroughly shaking the bottle each time before the medicine is given, is sufficient to prevent toxic effects. Concetti advises dissolving the phosphorus first in ether, and then mixing this ethereal solution with oil of almonds, heating gently on a water-bath so as to favour the complete solution of the phosphorus while the ether is evaporated. The concentrated solution of phosphorus is then dissolved in a larger volume of cod-liver oil, so that every 100 grams of the oily excipient contains 1 cgram of phosphorus; the dose given should contain $\frac{1}{20}$ cgram of phosphorus, and this should be administered twice daily before meals. **Phosphatine Falières**, a preparation of farinaceous material with calcium phosphate, is recommended[8] as useful in rickets. **Protylin** is another phosphorus

compound which has recently been used with success in rickets; this is a synthetic preparation of albumin with phosphorus, and contains 2·7 per cent of the element. In doses of 1 to 2 grams Bürger[9] obtained with this drug rapid and striking improvement. Ehrmann[10] records excellent results from another albumin compound with iron and phosphorus called **Fersan**; this was given in doses of 6 to 9 grs. per diem, and produced great improvement.

The view that rickets is dependent upon some auto-intoxication from the intestine is no doubt responsible to some extent for the use of antiseptics internally in this disease. **Guaiacol** made into an emulsion with cod-liver oil, or, if need be, also with calcium lactophosphate or hypophosphite, is recommended by Soles[11] as a most valuable remedy.

References.—[1]*Arch. Ped.* April, 1904; [2]*Ibid*, Feb., 1904; [3]*Med. News*, Feb. 13, 1904; [4]*Arch. de Neurol.*: *Brit. Jour. Child. Dis.* March, 1904; [5]*Ann. Méd. et Chir. Inf.* June 1, 1904; [6]*Rev. de Clin. Ped.*; *Brit. Jour. Child. Dis.* June, 1904; [7]*Rev. de Clin. Ped.*; *Arch. Ped.* Oct. 1903; [8]*Ann. Méd. et Chir. Inf.* July 15, 1904; [9]*Ther. Monats.*; *Brit. Jour. Child. Dis.* Aug. 1904; [10]*Ibid*; [11]*Arch. de Gén. Obst. y. Ped.*; *Arch. Ped.* April, 1904.

**RINGWORM.** *Norman Walker, M.D.*

Colcott Fox[1] records an epidemic of *tinea cruris* in four members of a household, all males; no source of infection could be discovered.

Hodara[2] shaves the head and applies daily a solution containing 5 to 10 per cent of **Chrysarobin** dissolved in equal parts of chloroform and glycerin, this being applied all over the scalp if necessary. Œdema and erythema are produced eventually, and then the chrysarobin is discontinued, the head washed with soap, and after a time the application is renewed. Cure, according to the author, occurs in four or five months, and treatment is continued for a month after all symptoms of the disease have ceased to appear. The action he avers to be desquamative, and the fungus is removed with the layers as they separate. Œdema and desquamation also occur at the follicular orifices, and surround the *débris* in the older diseased follicles, so removing the parasites.

Sabouraud[3], using **X-rays**, obtains comparatively rapid success in three months. He carefully regulates the distance at 15 cms., and the quality and quantity of the rays by means of the radio-chromometer and Holzknecht's pastilles. The area is further restricted by metallic cylinders of varying diameter applied to the part to limit the effect of the rays. Rays of mean penetration are used and applied for forty minutes at a time, and after seven exposures the hairs generally fall out.

References.—[1]*Brit. Jour. Derm.* May, 1904; [2]*Jour. d. Mal. Derm. et Syph.* Aug. 1903; [3]*Ann. de l'Inst. Pasteur*, Jan. 1904.

**ROSACEA.** *Norman Walker, M.D.*

After emphasizing the important effects of alcohol and gastro-enteritis as causative agents, and regulation of diet as being absolutely necessary as a curative, Shoemaker recommends **Galvanism** as local

treatment. The cathode is placed on the diseased spots, and the anode on the nape of the neck, while a current of 5 to 10 milliampères is passed Locally the following ointment is rubbed into the affected spots after they have been sponged with hot water :—

| | | | |
|---|---|---|---|
| ℞ Ac. salicyl. | ʒss | Ungt. aq. rosæ | |
| Ol. eucalypti | ♏x | Ungt. zinci oxidi | āā ʒss |
| Creosoti | ♏v | | |

When papules and pustules are present, 10 grs. to the ounce of **White Precipitate Ointment** stimulates the sebaceous glands and improves the secretion.

Reference.—[1] *Jour. Med. Chic. Coll.* Sept. 20, 1903.

**SCARLET FEVER.** *E. W. Goodall, M.D.*

Pathology.—Mallory[1] has published an account of certain protozoon-like bodies he has found in the skin of three cases and the tongue of one case of scarlet fever, fatal during the eruption stage. In six other cases in which death took place at an early period of the disease, no such bodies could be found ; neither could they be found in several cases dying during the desquamative stage, nor in the skin taken from four patients ill with the disease. Examinations of the nasal, lacrymal, and faucial discharges were also negative. [While it is probable that these bodies are not artificial, nor the results of cell-degeneration, yet it is highly problematical that they have anything to do with scarlet fever. Clinical evidence goes to show that the specific organism of this disease, if it is found anywhere, will be found in the nasal discharge that is so frequently present, not only during the acute stage, but also during convalescence and for some time afterwards.—E. W. G.]

Etiology.—Alice Hamilton[2] has made a study of the so-called "surgical scarlet fever," from the reports of cases published from time to time in various journals. She confirms the conclusions of other recent writers on the subject, that there is nothing special about this form of the disease ; it is simply scarlet fever which happens to occur in those who are the subject of wounds.

During the past few years the value of isolation hospitals in checking the spread of scarlet fever has been much under discussion, as also has the occurrence of the so-called "return" cases ; cases, that is, which arise in a house to which a patient discharged from a fever hospital has recently returned. Bearing on these subjects is the account given by Lauder[3], the Medical Officer of Health of the county borough and port of Southampton, of a certain method of administration carried out in the isolation hospital under his control ; and the results are certainly such as to warrant his experiment being tried in other places and on a larger scale. His method is, he tells us, "due to a firm belief, based on observation, that more classification and more segregation are essential, and, moreover, that 'return' cases are

attributable, not to the peeling condition, as is generally contended, but mainly to undetected discharges from the respiratory passages and ears in those who have left the hospital." [I venture to doubt whether the word "undetected" is quite the right one to use of these discharges. Their existence is often known, though possibly their importance is under-estimated.—E. W. G.] After this statement Lauder goes on to draw attention to the anatomical peculiarities of the nasal passages and pharynx, and the structures surrounding them, and to point out the "possibilities offered by the upper respiratory tract for the reception, cultivation, and dissemination of specific micro-organisms." Return cases are not prevented by either prolonged stay in hospital or the completion of desquamation. Infection most probably lingers in the naso-pharynx.

This view is supported by the following clinical observations: (1) The class—young persons—which is most susceptible to scarlet fever, is also most subject to abnormal conditions of the tissues of the naso-pharynx and the tonsillar region; (2) The period of incubation is short, and the changes in the mucous membrane of the upper respiratory tract appear early; (3) Evidence of infection following operation on the upper respiratory tract; (4) The constitutional symptoms and fever are, as a rule, in proportion to the condition of the respiratory passages; (5) The great majority of "return" cases are associated with discharges coming from the upper respiratory passages and ears; (6) Enlarged glands are in proportion to the crowding of the ward and the introduction of fresh acute cases. [I have quoted the author's words at some length so that his opinion may not be misunderstood, but am not prepared to agree with every one of these six propositions, at any rate without some qualifications.—E. W. G.]

Prior to February, 1903, the methods of administration employed by Lauder were the same as, or very similar to, those employed in most isolation hospitals. The patients were detained in the wards to which they had been admitted in the first instance, and were not discharged until desquamation was completed, and all complications, including discharges from the nose and ears, had cleared up. Just before leaving the hospital they had the usual disinfecting bath. In February, 1903, the following system was adopted: Patients were brought from only one house at a time. On arrival at the hospital, each patient was examined by the medical officer in the ambulance, and a cultivation from the fauces made. Doubtful cases were put into an observation ward, and sent home after a few days or detained, according as to whether they turned out to be scarlet fever or not. [Apparently the observation ward, which was disinfected after each case, was a single-bedded ward. At any rate it should be so. A large hospital would require several such wards.—E. W. G.] Patients who were found to have scarlet fever on admission, were sent to an "acute room," in which they were detained until the acute stage of

the disease had passed and the bacteriological examination excluded diphtheria. [Apparently this "acute room" also is single-bedded. A hospital of any size would require a large number of such rooms, which would be expensive to build and keep up.—E. W. G.] At the end of the acute stage, and if the bacteriological examination was negative as regards diphtheria, the patients were moved to a general ward "where the recent cases were kept apart from those that are convalescent." [Lauder does not state *how* they were kept apart.—E. W. G.] If, subsequent to their admission to this ward, any of the patients became the subjects of complications, such as aural or nasal discharges, enlarged tonsils, adenitis, etc., they were removed to a pavilion reserved for such complicated cases. At the end of the third week of the disease, the patients, if free from complications, are removed from the general ward to another pavilion, having previously been passed through the bathing room. This pavilion is disinfected before the admission of patients from the general ward. In this pavilion the patients are kept for a week, their noses, throats, and ears being douched with a disinfecting solution every evening after their bath. At the end of this week they are discharged from the hospital, whether peeling is completed or not, again passing through the bathing-room in the usual way. The general wards are disinfected at least once a month, or more frequently if it is considered necessary.

As a result of a trial of these methods from February to the end of the year, Lauder states: "These methods have not only comparatively freed us from the occurrence of albuminuria, enlarged glands, discharges from the nose and ears, etc., in the patients, but have reduced the duration of fever and the period during which they had to be kept in bed; and left us during the year without a single case of post-scarlatinal diphtheria or relapse. Further benefit would, I believe, result from the complete and continued separation of each individual case." The percentage of "return" cases was 2·15 for 1903, whereas for 1902 it had been 4·27.

Lauder gives evidence to show that desquamation at the end of four weeks from the commencement of the illness is not infectious; but that the most infectious condition is a discharge from the nose. His conclusions as to the sources of infection in patients who have recently gone through an attack of scarlet fever, are the same as those of other observers in this country, and we have drawn attention to them in recent numbers of the *Annual*. Aaser, of Christiania[4], from a study of 3800 cases of scarlet fever occurring during the years 1895 to 1902, has come to the same opinion. Amongst these cases were 79 in which the disease had been caught from patients who had recently been discharged from hospital.

This subject is also treated from a different point of view by Newsholme in a paper on "Protracted and Recrudescent Infection in Diphtheria and Scarlet Fever," read before the Royal Medical

and Chirurgical Society of London[5]. Some recent writers have suggested (see Lauder's paper quoted above) that the aggregation of patients suffering from scarlet fever in hospital wards intensifies the virus of the disease, multiplies complications, and prevents or hinders the elimination of infecting organisms, and that to this evil hospital influence the occurrence of "return" cases is due. Newsholme combats this view. As Medical Officer of Health for Brighton, an office which includes the superintendence of the fever hospital in that town, he is placed in an excellent position to study the whole question. He gives evidence to show that in scarlet fever, as in diphtheria, the infectivity may be very chronic, and that "return" cases occur in connection with patients treated entirely at home, as well as with those taken to hospital. In hospital practice, moreover, it is not necessarily the patients recently in contact with acute cases that give rise to "return" cases. The paper is a somewhat lengthy one, and for very instructive details and narratives of cases must be consulted by those who are specially interested in the subject. We must content ourselves here with quoting some of the author's conclusions :—

"The number of 'return' cases is small, and not such as seriously to invalidate the enormous benefit which patients and their friends receive from the hospital, even if it be assumed that 'return' cases are special hospital phenomena.

"Cases of protracted and recrudescent infection are oftenest associated with nasal and aural discharges, though not always so.

"The occasional recurrence of such 'return' cases emphasizes the necessity for post-isolation supervision of patients, whether treated at home or in hospital. This supervision must necessarily be medical.

"A study of the . . . cases indicates that in most instances the rhinorrhœa, which is oftener than any other morbid condition associated with protracted infection, was already present when the patient was first isolated, or appeared soon afterwards.

"There is definite evidence that in some instances infection has become dormant, to be aroused into activity by various circumstances.

"I am at present totally unable to accept as satisfactory the statistical evidence that 'return' cases are a special hospital phenomenon."

Diagnosis.—Windle[6] lays great stress on the condition of the fauces in this disease, a condition which he believes to be diagnostic. To quote his own words, "The scarlatinal eruption occurs on the fauces, has the same essential characters, and goes through the same changes that it does on the skin ; and, what is of great importance for diagnosis, it occurs in the throat as long as twenty-four, thirty-six, or even forty-eight hours before it appears on the skin, being in fact the first manifestation of the rash. In its earliest phase this faucial eruption consists of minute, bright red, discrete, slightly conical spots, each of which is surrounded by a ring of erythema. They are best seen on the pillars of fauces, uvula, soft palate and posterior part

of the hard ; for here the mucous membrane is paler than that of the rest of the mouth, and the eruption is not obscured by the presence of local inflammatory changes. The rash occurs on the posterior wall of the pharynx, the tongue, and occasionally extends forwards on to the buccal mucous membrane. In the mildest cases the punctated character of the eruption is maintained throughout. As a rule, however, in cases of ordinary severity, by the time the rash appears on the skin the punctate character has given place to an intense general 'sealing-wax redness' of all the parts at the back of the mouth."

The writer emphasizes the early onset of throat symptoms ; "So far as my experience goes," he says, "*the* first objective symptom of scarlet fever is sore throat." Again, "The throat changes are invariably present at the onset of general symptoms." So constant, characteristic, and early is this throat lesion, that "to recognize an illness as scarlet fever on the first occurrence of symptoms is, in the majority of cases, a matter of little or no difficulty." As to the diagnosis between diphtheria and scarlet fever in the early stage, "the nature of the affection of the throat in scarlet fever is sufficiently characteristic to discriminate between the two." Lastly, later in the paper he states that "even in the earliest stage, if any given case is scarlet fever, there will certainly be some local changes to be seen in the fauces."

[I have quoted from this paper at some length, because the author holds an official position as Medical Officer of Health ; but I cannot say I agree with what he says. My experience differs widely from his. I have seen many cases of scarlet fever without any faucial lesion whatsoever, and have found the early diagnosis of the disease very difficult in some cases. Windle also states that there is a characteristic faucial eruption in the early stage of measles. Though the condition he describes ("spots two or three times as large as scarlatinal spots." but "of much deeper colour") is occasionally met with in measles, yet in my experience it is by no means constant. It is certainly not so frequently present as are Koplik's spots, of which, however, the writer remarks that they "are said to appear on the buccal mucous membrane during the stage of invasion." Koplik's spots are of much more value in the early diagnosis of measles than any other appearance of the faucial or buccal mucous membranes, a fact to which several writers have borne testimony during the past few years ; see, for instance, a paper by Muir[7], who relates a series of cases occurring at the Plaistow Fever Hospital, in which the appearance of these spots before the outcome of the rash on the skin enabled an early diagnosis to be made.—E. W. G.]

The anomalous nature of scarlet fever is well exemplified as to its milder forms by an outbreak reported by Bertram Thornton[8], the Medical Officer of Health for Margate. The epidemic occurred in a boarding-school of 300 children. There were three groups of cases :

(1) Typical cases, 31 in number, with rash, sore throat and elevation of temperature, usually not more than one or two degrees; (2) Children who had no observable rash, but only slight redness of tonsils and from one to two degrees of fever, with characteristic peeling, beginning during the second or third weeks—19 cases; these were all isolated on suspicion; (3) Children who simply peeled, and though specially examined daily, showed no sign of the slightest indisposition—46 cases. A large proportion of cases from classes (2) and (3) were sent to the local fever hospital, and none of these two classes developed the disease there.

A paper by Biss[9] entitled "The Borderlands of Diphtheria and Scarlet Fever" may be referred to for evidence, if any is wanted, as to the difficulty there often is in diagnosing scarlet fever and diphtheria. The author relates the histories of several cases of scarlet fever without a rash, tonsillitis with anomalous rash, etc., and discusses their significance.

Treatment.—High temperature in measles and scarlet fever is usually very difficult to bring down. According to Berg[10], in the eruptive stage of scarlet fever and measles, "the subcutaneous swelling and infiltration which is a part of the eruption, causes pressure upon the cutaneous capillaries and their nerves. These capillaries do not undergo the primary contraction under the influence of cold which occurs when cold is applied to healthy skin, nor does the secondary dilatation which follows the primary instantaneous contraction while the skin is normal, occur in skin which is the seat of a measles or scarlatinal eruption. There is, therefore, not that interchange of cooled blood from the periphery and warm blood from the centre which is so necessary a condition to the reduction of temperature by cold baths or packs. For the same reason, cold baths and cold packs in measles and scarlet fever inhibit perspiration, both primarily and secondarily." For temperatures of 104° or over Berg recommends the placing of the patient in a bath at a temperature of 80°, and then raising of the temperature of the water to 90° at the end of five or ten minutes by the addition of hot water. After the bath the patient should be wrapped lightly in a sheet, and covered by a thin blanket. Lesser degrees of pyrexia may be treated by spraying with water at 70° to which one-third of alcohol has been added. Friction of the skin should be avoided.

References.—[1]*Jour. Med. Res.* Jan. 1904; [2]*Amer. Jour. Med. Sci.* July, 1904; [3]*Lancet*, Mar. 12, 1904; [4]*Nord. Med. Arch.* 1903; Abt. ii. Anhang 51; [5]*Med. Chir. Trans.* p. 549, 1904; [6]*Clin. Jour.* May 18, 1904; [7]*Lancet*, June 11, 1904; [8]*Ibid*, June 18, 1904; [9]*Ibid*, Nov. 7, 1903; [10]*Med. Rec.* July 2, 1904.

**SCIATICA.** *Robt. Hutchison, M.D.*

Dr. William Bruce[1], in a lecture, brings forward a new view as to the nature of sciatica. He considers that the complaint is not really an affection of the sciatic nerve at all, but is due to an inflammation of the

hip-joint, probably osteo-arthritic in nature. The arguments on which he founds this opinion are based on observation of 418 instances of the disease, and they may be summarized as follows. In almost all of his cases lameness was present, movement causing pain ; there was " tenderness on pressure over the capsule " in more than half the cases ; and flexion or rotation caused pain in a large proportion. In almost every case he has found wasting and flattening of the hip muscles, and more or less obliteration of the gluteal fold of the affected side. He contends that if sciatica were an affection of the sciatic nerve, all the muscles supplied by it should be wasted, and not muscles like the glutei, which are supplied separately by nerves from the sacral plexus. In sciatica, moreover, he points out, there is pain along the outer side of the leg, extending in some cases as low down as the heel, and there are also occasional patches of anæsthesia, generally on the outside of the thigh or leg. These pains and patches of anæsthesia he attributes to " reference " from the branch of the sciatic nerve which supplies the hip-joint, and he points out the similarity of the symptoms to those displayed in the morbus coxæ of childhood. In more than half of his cases there was evidence of gout or rheumatism in other joints, and a small number of cases which began as sciatica went on to ankylosis of the hip-joint. Dr. Bruce insists also upon the great value of **Rest** in the treatment of sciatica, in the early stage at all events, and finds in this an additional support for his view that the disease is really one of the hip-joint.

The *Lancet* discussing the lecture editorially[2], admits how vaguely the term sciatica is often used, but holds that Dr. Bruce has failed to prove his contention that a true sciatica neuritis does not occur. It agrees with him, however, in the great importance of rest in treatment.

References.—[1]*Lancet*, Aug. 22, 1903 ; [2]*Ibid*, Aug. 29.

**SCLERO-KERATITIS.** (*See* Eye, General Therapeutics of.)

**SCURVY.** *J. W. W. Stephens, M.D.*

Coplans[1] argues that scurvy is not due to causes associated with food, but is an infection conveyed primarily through the mouth. He bases his arguments on the unequal distribution of scurvy among bodies of men in the Transvaal, whose diet was practically identical.

Reference.—[1]*Jour. Trop. Med.* April, 1904.

**SCURVY (Infantile).** *G. F. Still, M.D.*

Symptoms.—The clinical picture of severe scurvy, as Dr. W. S. Colman[1] says, is so characteristic that anyone conversant with the disease can recognize it at a glance. A fairly-nourished child with a pale face, or, in the later stages, a peculiar earthy complexion, lies quiet without obvious discomfort as long as he is not touched, but directly anyone touches him, or even approaches the cot, he begins to scream with fear or with pain. A characteristic attitude is seen

as the child lies in bed ; the legs lie flaccid, with the thighs abducted and the knees a little flexed. The bones of the limbs are tender, and usually there are local swellings due to subperiosteal hæmorrhages, most frequently just above or below the knee. Hæmorrhage into the orbit occasionally gives rise to proptosis and ecchymoses of the eyelids. If teeth have been cut, there are nearly always changes in the gums, swelling, and hyperæmia, or actual hæmorrhage. Epistaxis and hæmaturia are not uncommon ; subcutaneous hæmorrhages, so common in adult scurvy, are only occasional in the infantile form. Rickets is often associated with infantile scurvy, but certainly not always. Numerous cases have been recorded in which hæmaturia was the only symptom of infantile scurvy ; Neter[2] describes such an occurrence in an infant eight months old ; the effect of antiscorbutic diet proved the scorbutic character of the hæmaturia. Morse[3] reported several such cases, and considered that scurvy was the most common cause of uncomplicated hæmaturia in infancy. The present writer[4] has pointed out that whilst hæmaturia or very slight albuminuria is probably rather the rule than the exception in infantile scurvy, in the majority of the cases these symptoms represent merely the same hæmorrhagic tendency in the kidney as is seen beneath the periosteum in the limbs ; but there does occur also a true nephritis, with much albumin and many casts, as a less frequent complication.

Etiology.—As Colman says (*loc. cit.*), the most important, though probably not the only factor, is the absence of sufficient fresh animal or vegetable food from the diet, and the two features most striking are : (1) That in none of them is the child taking a diet solely of fresh milk ; and (2) That the great majority are being fed on milk sterilized at high temperatures, or on patent foods containing milk which has been desiccated. He suggests the possibility also that products of decomposition (not necessarily offensive) are subordinate factors. Shingleton Smith[5] states that there is no evidence that sterilized milk is itself the cause of scurvy. Numerous cases, however, have been attributed to this cause, and according to the collective investigation of the American Pediatric Society, a considerable proportion of cases are due to it. It is to be remembered also that the milk which is sold as "humanized milk" is almost invariably sterilized. It has been objected that the scurvy may be due to dilution of the milk, but to this objection there is the obvious reply that upon similarly diluted milk which has not been sterilized scurvy does not occur. H. Ashby[6] has recently recorded an instance of scurvy resulting from the "humanized" and sterilized milk which is supplied from a municipal depôt, but in this case some baked flour had been given also, and there is no doubt that the addition of such foods, even to a diet containing some fresh milk, tends to produce scurvy.

Elliott[7] refers to the theory of ptomaine-poisoning, but dismisses it as inadequate to explain the changes met with in these cases.

Professor Ausset[8] considers infantile scurvy as of infective origin, and produced by toxins absorbed from the infected gastro-intestinal tract; the offending micro-organism, he thinks, may be the *bacillus hæmosepticus hominis* described by Lewine. After ridiculing the idea that diet plays any part in its production—potato in particular excites his scorn, for while Cheadle, he says, states that potato is antiscorbutic, the disease was caused by this food in a case observed by Choquet—he gives elaborate directions for intestinal antisepsis, irrigating the bowel, dosing with calomel, etc.

Diagnosis.—The conditions for which infantile scurvy is most often mistaken are stated by Colman (*loc. cit.*) to be: (1) Periostitis; (2) Syphilitic epiphysitis; (3) Paraplegia, or infantile paralysis; (4) Ordinary ulcerative stomatitis. The condition of the gums will often settle the diagnosis, and in the last-mentioned disorder the presence of changes on the tongue and cheeks, as well as on the gums, will serve to differentiate it from scurvy. The nature of the previous feeding will, of course, be of great importance in the diagnosis.

Treatment.—This consists simply in rectifying the fault in the diet. **Fresh, Unboiled Milk** must be given instead of sterilized milk, all desiccated infant foods must be given up, and fresh vegetable or animal food must be given. This latter requirement Colman would supply either by **Potato Soup,** made by cooking a small potato in its jacket, sieving it, and then pouring over it a breakfast-cupful of boiling milk, and adding a little sugar; or else by broth in which a muslin bag of chopped potato, carrot, etc., has been suspended whilst it was being made. **Raw Meat Juice** is also useful, and **Orange-juice** or **Lemon-juice** should be given daily. It is well to secure immobility of the limbs by placing the legs between sand-bags, and for the upper limbs the same writer recommends that they should be fixed by gently bandaging them to the side.

References.—[1]*Lancet,* Aug. 15, 1903; [2]*Deut. Med. Woch.*; *Brit. Med. Jour.* Aug. 27, 1904; [3]*Med. Rec.* June 25, 1904; [4]*Lancet,* Aug. 13, 1904; [5]*Bris. Med. Chir. Jour.* Dec. 1903; [6]*Brit. Med. Jour.* Feb. 27, 1904; [7]*Bris. Med. Chir. Jour.* Dec. 1903; [8]*Ann. Méd. et Chir. Inf.* May 1, 1904.

## SEA-SICKNESS.

*Robt. Hutchison, M.D.*

Zinz[1] is of opinion that sea-sickness is due to a high degree of cerebral anæmia induced by the pitching of the vessel. This effect is produced through the vasomotor centres in some way as yet unexplained, but comparable to the mode of action of the emotions. The vomiting act is nature's effort to replenish the impoverished cerebral circulation, by the congestion of the entire head which always accompanies it, and the stomach is not really directly concerned in the process at all. Hence the temporary feeling of relief which follows each paroxysm of vomiting. If this hypothesis be correct, it follows that the proper treatment is to induce cerebral congestion by every possible means: first by position, the head being kept low; second by diet, to promote

as good nutrition of the brain as possible ; and third, by the use of any medicinal agents that produce dilatation of the cerebral vessels.

Dr. Schlief[2] says that he has found **Anæsthesin**—first recommended by Von Noorden in the treatment of gastric hyperæsthesia—useful in preventing sea-sickness. He gives from three to four powders, each containing 7½ grs., during the first few hours at sea, and again on the following day. The remedy is efficacious even after the first symptoms, such as giddiness and loss of appetite, have made their appearance ; but it is powerless after the sickness has really set in. Dr. Schlief recommends that anæsthesin should form part of the stock of medicines carried on board ship.

REFERENCES.—[1]*Med. Rec.* June 20, 1903 ; [2]*Lancet*, March 12, 1904.

**SEBORRHŒA.** *Norman Walker, M.D.*

Much literature, especially in France, is gradually leading opinion round to the consideration of the possibility that the various affections beginning with simple pityriasis, and ending with psoriasis, belong to one group. Brocq[1] in a recent article on the intermediate eruptions between pityriasis rosea and seborrhœa psoriasiformis, mentions two groups connecting these. The first is characterized by the familiar "herald patch," and is succeeded, after a few days, by an eruption which shows a greater tendency to invade the face and scalp than pityriasis rosea does. The second group more closely resembles psoriasiform seborrhœa, beginning as a generalized eruption in persons not previously subject to skin eruptions, not exhibiting a primitive plaque, but having the same objective and evolutional characteristics.

Macleod[2] gives a historical review of the differential diagnosis of seborrhœa and the seborrhoides. Seborrhœa oleosa is, he states, in itself an affection of no serious import unless it reaches an unusual degree of intensity, when, especially in young girls, it may call for treatment. The seborrhoides are dermatoses which differ more or less from seborrhœa, but which are preceded by it or associated with it. He quotes Audry as including under this head acne vulgaris, pityriasis, and eczematous seborrhoides.

The most generally effectual local treatment is by means of ointments with a base of equal parts of lanolin and vaselin, and containing 2·6 per cent of **Sulphur Præcip.** If much scaliness exists, 1 to 2 per cent of **Salicylic Acid** is added, while if the lesions have become secondarily infected with pus-cocci, the same percentage of **Ammoniated Mercury** may be substituted. If the disease is widely disseminated, **Sulphur Baths**, either natural or medicated, should be employed.

REFERENCES.—[1]*Press Méd.* July 11, 1903 ; [2]*Pract.* May, 1904.

**SENILE PARAPLEGIA.** *Purves Stewart, M.A., M.D.*

In old people suffering from arteriosclerosis, there sometimes develops a slowly progressive form of paraplegia. The symptoms are mainly motor :—feebleness of the legs, with a tendency to spasticity,

the knee-jerks being increased. The bladder and rectum also become imperfectly controlled. There is no anæsthesia. Pic and Bonnamour[1] have recorded the clinical history of a number of these cases, with a report of the pathological examination in seven instances. The changes in the cord consist in patches of sclerosis confined to the areas surrounding atheromatous intraspinal arterioles—a peri-arterial sclerosis. The resulting paraplegia is never complete, nor does the patient lose the power of standing, but the prognosis as to recovery is, of course, unfavourable. Starr[2] also emphasizes the fact that this disease is caused by an underlying arteriosclerosis, and not, as was formerly thought, due to senile atrophy of the nerve elements.

References.—[1]*Rev. de Méd.* 1904, No. 1 and 2; *Med. Chron.* April, 1904; [2]*Med. Rec.* July 4, 1903.

**SENILITY.** *Purves Stewart, M.A., M.D.*

Senility is a relative term. To state that one man may be worn out at forty, while another may be young at sixty or seventy, is a truism. Two of the most potent factors in inducing premature decay are alcohol and syphilis. Not uncommonly, some variety of mental disorder is associated with senility, and whether the senility be of the ordinary or the premature variety, the type of symptoms is not thereby affected. The most characteristic forms of mental disorder associated with senile decay, according to Savage[1], are the following :—

1. *Simple dementia*, marked chiefly by loss of memory for recent events, whilst old memories are somewhat accentuated. For this class of patients, little or nothing can be done.

2. There is a *loss of higher self-control*, evidenced often in maniacal outbursts, or in indecent exposure, etc. These cases require asylum treatment, or at least, special attendants (if the patient's means can afford it). Some cases of senile mania are the sequel of a local cerebral hæmorrhage or thrombosis. The diagnosis from senile general paralysis of the insane is sometimes difficult. The presence of inequality of the pupils with a history of syphilis would tend to favour the latter. An *arcus senilis*, according to Younger[2], is rare in general paralysis, but a common sign of senility.

3. *Senile melancholia* is also well recognized. It is usually of the hypochondriacal type, and frequently associated with the idea of occlusion or obstruction of the bowels. This delusion may cause the patient to refuse food, in which case asylum treatment is essential. Or refusal of food may be due to hallucinations of smell, the patient thinking that his food stinks. But the commonest form of melancholia in the old is a dread of ruin, poverty, or the workhouse. Senile melancholics must be treated by abundant food, rest in bed, and stimulants, but not by exciting surroundings, such as travelling abroad.

In addition to the above varieties of senile insanity, it is not uncommon to meet with cases of *post-hemiplegic* mental weakness. Though not impossible, it is rare for a patient to be on the same

intellectual plane after an attack of cerebral hæmorrhage or thrombosis as he was before it. The degree of mental weakness varies. There may be acute mania, but it is much more common to find progressive mental weakness, irritability of temper, loss of memory, and deficient self-control.

REFERENCES.—[1]*Pract.* Dec. 1903 ; [2]*Med. Press,* Nov. 18, 1903.

**SEPTICÆMIA.** *Robt. Hutchison, M.D.*

Forster[1] and Heaney[2] both record favourable results from the use of **Anti-streptococcic Serum**. The case recorded by the former was one of puerperal septicæmia, in which streptococci were found in the blood. Heaney's case was one of general septicæmia following a poisoned wound, in which the blood contained only staphylococci ; yet in spite of this fact, the result of each injection on the temperature and general condition was most marked. These cases seem worth referring to, as the reputation of anti-streptococcic serum has rather declined of late, perhaps somewhat unjustly.

REFERENCES.—[1]*St. Mary's Hosp. Gaz.* May, 1904 ; [2]*Lancet,* Aug. 8, 1903.

**SEROUS EFFUSIONS.** *Robt. Hutchison, M.D.*

Barr[1] recommends the treatment of serous effusions by **Tapping,** followed by the **Injection** of one drachm of **Adrenalin Chloride** solution. The adrenalin acts, in his opinion, by constricting the vessels in the wall of the sac, and so preventing the pouring out of fresh secretion. He has tried the method with success in pleuritic, peritoneal, and pericardial effusions. He also advocates the introduction of **Sterilized Air** to replace the fluid which has been withdrawn, in the belief that by so doing the tendency to the formation of adhesions is lessened. For the exact method by which these procedures are carried out, the reader is referred to the original paper.

REFERENCE.—[1]*Brit. Med. Jour.* March 19, 1904.

**SHOCK.** *Priestley Leech, M.D., F.R.C.S.*

Dr. Guy C. Kinnaman[1] made a number of experiments on dogs with a view of establishing the temperature relationship existing in shock. Full details of the experiments are given, and his conclusions are as follows : Shock must not be considered as due to the lowering or exhaustion of one bodily function, but as a composite condition embracing an interference with the normal height of the blood pressure (lowering), an interference (lowering) with the respiratory act, and a marked fall in the body temperature. As the shock increases in severity, the most uniform and progressive factor is the fall in temperature. The relationship between the fall in bodily temperature and shock, is proved by the following facts :

1. In one series of experiments the fall in temperature was the *sole* cause of shock.

2. When, by continuous bath, the temperature fell but one degree

centigrade (average), the respirations were increased instead of diminished, and the fall in blood-pressure was greatly lessened.

3. By raising the body temperature previously lowered in shock, the respiratory rate was increased and the blood-pressure raised.

Of the three factors concerned, the **Temperature** commands first place by its power of production, by its power of limitation, and by its power of amelioration of the composite condition—shock.

Martin and Pennington[2] give the results of some experimental work on rabbits, showing the effect of **Adrenalin** on the bactericidal power of the serum; this power was reduced. The dilution must be at least 1–10,000 when given hypodermically. There is no convincing proof that the drug is as efficacious, when used on man, as laboratory experiments would indicate. In cases of urgency it may be given intravenously in a dilution of 1–10,000, and should be given slowly.

Crile[3] has made experiments upon surgical shock, and its treatment and prevention. The reader must bear in mind a distinction which he makes between *collapse* and *shock*. Collapse is the immediate sudden depression which may result from cardiac failure, from hæmorrhage, or from injuries of the vasomotor centre. Shock is the more gradually developed depression which is due to the exhaustion of the vasomotor mechanism. Impaired cardiac and respiratory action, hæmorrhage, anæsthesia, and temperature, may all contribute in some degree to the final result; but the important thing is the vasomotor breakdown from over-stimulation. In his experiments on animals, alcohol, nitroglycerin, amyl nitrite, and strychnia, all increased rather than diminished shock. Digitalis gave but little better results. The effects of **Adrenalin** are more promising of good; in the normal animal, in every degree of shock and collapse, adrenalin administered intravenously caused a rise in the blood-pressure, but its effects are very transient, on account of the rapidity with which it is oxidized in the blood. The most effective method of its administration was thus found to be by a continuous intravenous infusion, in strength of from 1–50,000 to 1–100,000. Great caution must be exercised in its administration, for in an overdose it has a marked inhibitory effect upon the heart; this inhibitory action may be relieved by injection of **Atropine. Saline Solution** intravenously or subcutaneously introduced, in every observation caused a rise in the blood-pressure, which was usually gradual, and was sustained in proportion to the degree of shock present. In cases of moderate shock the gain in pressure was fairly well sustained; in deeper shock the rise was not so marked, and not so well sustained; the solution is not retained in any considerable quantity in the blood-vessels, but is eliminated rapidly. The value of **External Pressure,** as in bandaging the extremities or by broadly applied pressure over the abdomen, was demonstrated in many of the experiments made. **Morphine** administered previously to the infliction of a traumatism, lessened to a considerable degree an animal's

susceptibility to shock, and thereby made possible more extensive and prolonged operations.

He does not seem to have investigated the relation of temperature to shock. It appears that clinically **Injections of Morphia, Saline Infusions** and subcutaneous injections, **Bandaging** of the extremities, **Hot Bottles,** and **Rubbings,** seem our most efficient and practicable treatment of shock.

REFERENCES.—[1]*Ann. Surg.* Dec. 1903; [2]*Amer. Med.* vol. vi. p. 813; [3]*Blood-Pressure in Surgery* [Lippincott & Co.], see *Ann. Surg.* Feb. 1904.

## SITOPHOBIA.

*Prof. Boardman Reed, M.D., Philadelphia.*
*Walther E. Rahte, M.D., Philadelphia.*

Einhorn[1] calls attention to the importance of sufficient alimentation in the treatment of many chronic affections. Not only sufficient nutrition, but frequently over-nutrition, is essential in the cure of a great many invalids. Sitophobia is a condition in which too little food is taken on account of fear; this fear relates to pain or discomfort in the digestive apparatus after eating. In order to avoid these pains, the patients exclude at first the coarser foods, and later, even easily-digestible articles from their dietary, taking finally only small quantities of milk or broth. Sitophobia may also exist on account of the fear of aggravating an old chronic condition. This is especially true of sufferers from intestinal troubles, who are afraid to eat heartily lest the condition become worse. Sitophobia, if left alone, leads to a partial, sometimes to a total, inanition. Incomplete inanition or sub-nutrition is frequently met with. Sometimes the organism is unable to utilize larger amounts of food; as in carcinoma of the stomach, extreme degrees of benign stenosis of the pylorus, and during the febrile periods of the acute infectious diseases. In most cases of sub-nutrition, however, the organism would be able to utilize the food if it were supplied with it. These are, therefore, conditions in which amelioration is possible.

Einhorn reports three cases of inanition, and gives his method of handling such patients. In complete inanition lasting twenty-four hours or more, the treatment consists in the administration of liquid or semi-solid foods in not too large amounts. If such patients take too much or too coarse food, serious trouble may be caused in the exhausted intestinal tract. Hence it is highly important that the physician proceed with caution, and restrict the diet during the first few meals.

The treatment of incomplete inanition or sub-nutrition is altogether different. We must first combat the sitophobia, if it exists. It is important to encourage the patient to eat in spite of pain. Usually the latter is not so severe, and in nearly all cases we shall succeed after a while in banishing the fear of food. Soon the patient will be able to take ordinary nourishment. Even articles of diet which formerly caused severe pain, are now tolerated without difficulty.

The stomach, or rather the intestinal tract, seems to accustom itself to the greater demands upon it. In some cases it is advisable at the beginning of the treatment to diminish the sensitiveness of the digestive apparatus by **Bromides** or similar drugs. Another point of great importance is to increase the nutrition of the patient. It is necessary at first that the patient take enough food to prevent any loss of weight or strength. Later, an increased quantity should be ordered, so that the patient may increase in weight. By following out this routine of treatment, the author's first patient increased two pounds during the first week; the second, fifteen pounds in the five months following the beginning of treatment; the third case gained three pounds in seven weeks. The increase of weight continued as long as the excessive amount of food was taken. At the same time there was an increase in bodily strength, so that patients, who for a long time had been invalids, were able to return to work.

REFERENCE.—[1]*Amer. Jour. Med. Sci.* Aug. 1903.

**SLEEPING SICKNESS.** (*See also* TRYPANOSOMIASIS).

*J. W. W. Stephens, M.D.*

Dutton, Todd and Christy[1], from a study of sleeping sickness in the Congo Free State, classify cases according to their clinical symptoms. (1) Cases with no definite symptoms of illness; (2) Cases with few symptoms; (3) Fatal cases showing well-marked symptoms, the most notable being fever, lassitude, weakness and wasting. They further subdivide type (3) into (*a*), fatal cases showing no sleep symptoms; (*b*), fatal cases showing sleep symptoms. The symptom "sleep" is an inconstant and minor feature of the disease, as seen in Congo. The following instances may be given of these types:—

1. No dullness or vacancy of expression, lymphatic glands all easily palpable, freely movable and hard; parotids enlarged. Patient feels in perfect health.

2. Has a certain dullness of expression, skin soft but dry, lymphatic glands all considerably enlarged; temperature rises in the evenings.

3. Sub-group (*a*), patient emaciated, expression dazed, is constantly trembling. Skin dry. Lymphatic glands all easily palpable and hard. Answers questions quickly. Later, the speech became thick, the tremors increased, intelligence very dull, is seldom asleep, but is always lying down, and passes fæces under her. Death occurred in a month from the time when first seen. Sub-group (*b*), expression dull, pained, stupid. Speech thick and slow, œdema of shins and feet, face and lips puffy. Skin dry and dirty, lymphatic glands not enlarged. Patient sits dozing over a fire, she is found asleep from time to time, can, by shouting at her, be persuaded to speak. She then became lethargic, and aroused with difficulty. She eats nothing, sensation dulled. Death.

From the first appearance of obvious signs of infection with the

trypanosome. the disease lasts on an average two to four months. It is uncertain how long (probably a year or more) the patient may harbour the trypanosome, and yet show no signs of the disease. Recovery is exceedingly rare, but there is a case recorded by Manson and Broden of a European lady who was infected, but has eventually remained free from trypanosomes for the space of a year.

Secondary infections are common. Thirteen out of twenty-two necropsies showed secondary infections or complications: in four cases, purulent meningitis ; in one case, purulent pleurisy and pneumonia ; in one case, pneumonia and tubercle ; in one case, localized gangrene of the lung ; in two cases, caseating lymphatic glands ; in two cases, dysenteric ulcerations ; in one case, recent extensive pericarditis ; in one case, purulent femoral, inguinal, and iliac glands (gonorrhœa). Purulent meningitis is a common complication both in Congo and Uganda, and a streptococcus is present in the purulent fluid. It seems probable, too, that the lesions, such as congestion of cerebral vessels with an increase of pia-arachnoid fluid, described as characteristic of sleeping sickness, are in some cases attributable to the secondary infection, as death may occur with typical sleep symptoms, and yet none of these signs be present, and moreover the organs be sterile.

The Parasite.—Parasites may not be found for months at a time, by the ordinary method of making a somewhat thick cover-glass preparation, and examination with about a $\frac{1}{6}$ inch lens. The number seen at any time is generally small, and bears no relation to the severity of the disease. The parasites may in some cases gradually increase in numbers and then suddenly disappear. *Post-mortem*, parasites can be found fairly frequently in pericardial, pleuritic, and peritoneal fluid, even without centrifugalization and examination of the sediment.

*Animal Experiments.*—Most small animals used for laboratory purposes are susceptible, *e.g.*, rats, mice, rabbits, guinea-pigs. The incubation period is from seven to twenty-one days. About half the inoculations fail. *Post-mortem* material, though it contains trypanosomes, is not infective for animals. The dog-faced baboon (*Cynocephalus sp.*) is resistant.

*Cerebrospinal Fluid.*—Christy[2] describes the operation of lumbar puncture. After cleansing the skin, an injection of cocaine is given subcutaneously, and deep into the muscles over the interspace above the last lumbar vertebra. This interspace is on a straight line drawn between the two iliac crests, and the needle should be passed half an inch to the left of the middle line, not midway between the two interspinous processes, but slightly nearer to the upper one. After waiting a few minutes for complete cocainization, the knees are adjusted so as to be exactly opposite each other. The patient is then secured by an assistant in a position of extreme flexion, and the tips of the fingers of the left hand are placed firmly upon the left iliac crest, leaving

the thumb to indicate by practice not only the interspace, but the exact spot and direction as well. The needle is passed slightly upwards and towards the middle line. The only difficulty is to gauge the depth to which the needle should be passed, for if the point is allowed to prick the cord or the membranes opposite, blood immediately appears, and the results of the operation are valueless for statistical purposes. In no case should the syringe be used as a handle for the needle, but into the base of the needle should be screwed a metal handle, for which a syringe with a short rubber connection can be substituted.

Christy, as the result of over a hundred lumbar punctures in cases of sleeping sickness, comes to the following conclusions: (1) That in many cases the trypanosomes never find their way into the cerebrospinal fluid, and in those cases in which they do, they are more frequently to be found towards the termination of the disease; (2) That the commencement of the fever or other symptoms is in no way correlated to the entrance of the parasites to the cerebrospinal fluid; (3) That a large number of trypanosomes in the cerebrospinal fluid is rare, but when it does occur, there is usually an access of temperature (the number of trypanosomes found in the centrifugalized cerebrospinal fluid is seldom more than one to four); (4) That the parasites may come and go in the cerebrospinal fluid as in the blood; (5) That enormous numbers may appear in the blood without appearing in the cerebrospinal fluid, and to some extent *vice versa*; (6) That when trypanosomes are present in the cerebrospinal fluid, its white cell elements are apt to be increased; (7) That in cases where the parasites gain access to the cerebrospinal fluid early in the disease, mania and other head symptoms are more likely to be prominent.

References.—[1]*Brit. Med. Jour.* Aug. 20, 1904; [2]*Ibid.*

**SMALL-POX.** *E. W. Goodall, M.D.*

Pathology.—A long and elaborate paper by Stokes[1] gives an account of the pathology of small-pox derived from a study of 5 fatal and 6 non-fatal cases. The conclusions at which the author arrived are as follows: "The early skin lesions indicate that the primary infection in small-pox takes place in the lungs, probably by inhalation. The poison, when it enters the circulation, shows a selective influence on the epithelium of the skin and respiratory tract, and many cases are probably not further affected. The serious and fatal lesions of small-pox are caused by the *secondary* infection from the skin and respiratory tract, and the infectious agent is usually the *streptococcus pyogenes*. This organism is so distributed throughout the lesions as to explain most of the visceral changes, such as thrombosis, local necrosis, and the various pulmonary changes. The streptococcic septicæmia is the most striking feature of fatal small-pox, and if it were possible to overcome this condition by a special serum, the mortality from the disease would be greatly reduced."

Treatment.—It will be remembered that a year or so ago the late Prof. Finsen[2] contributed an article to one of the medical journals of this country in which he very strongly advocated the **Red Light** treatment of small-pox. He claimed that under this treatment suppuration would generally not occur, and that the patients would recover without scars, or only with invisible cicatrices. He looked upon the red-light treatment as an established fact, and appealed to those in charge of small-pox patients in this country to avail themselves of its benefits. Accordingly a trial of it was made in the Small-pox Hospital of the Metropolitan Asylums Board, and an account of the result is given by Ricketts and Byles[3]. The former gentleman has had a very large experience of small-pox, having held for some years past the post of superintendent of the Small-pox Hospital of the Asylums Board. The number of cases treated was 13. Of these, "five were vaccinated, six were unvaccinated, one patient had been vaccinated in the period of incubation, and in one case the matter was doubtful. Four were cases of discrete, and nine of confluent, small-pox. The mildest was one of discrete small-pox of a very moderate type of severity, and at the other extreme was one of very severe confluent small-pox. The other cases ranged between these two extremes." Two of the cases proved fatal during the fever of suppuration.

The authors discuss in the first place, what is to be understood by the statement that suppuration is prevented by the red-light treatment. They point out that it may mean either that the vesicles fail to maturate even in unmodified cases of the disease; or that unmodified cases do not occur, being converted by the treatment into cases of modified small-pox, a form of the disease in which suppuration is at a minimum. With respect to the former of these events, they state that the prevention of suppuration of the pocks is an "unnatural phenomenon, which could hardly fail to be remarked," and that in their cases they certainly did not remark it, the pustules being as large and as well-developed as usual. The latter event is similar to vaccination, and an unusual frequency of modified cases would be expected. They had, therefore, in selecting cases for treatment, to be careful to eliminate cases that were modified by vaccination or natural immunity, and to make use of such cases only as seemed likely to run an unmodified course. Their selection was justified in 11 out of the 13 cases; that is, 2 only of the cases exhibited modification. And they state that "those 'sequelæ due to suppuration' which the red-light treatment is claimed to prevent, such as boils, ulceration, and the like, were very much in evidence" in some of their cases. Nor was there any reason to suppose that this treatment had any effect in diminishing the suppurative fever. Further, the treatment did not appear to make any difference with respect to the scarring that results from the suppuration of the pocks.

They further state that all the cases they treated fulfilled the

condition laid down by Finsen, that to be efficacious the treatment must be begun before suppuration is imminent. Finally, they cannot agree that this treatment has any of the merits which have been claimed for it. They conclude their paper with a *resumé* of the results of other observers who have made trial of this method, and are of opinion that some of the apparently favourable results are really to be attributed to a natural mildness of the disease, or to the effects of previous vaccination, factors which have to be most carefully considered in estimating the value of any form of treatment. As an illustration of the varying severity within a very short period, they point out that, while the case-mortality of small-pox in London in 1902 was over 17 per cent, in 1903 it was less than 4 per cent. Careful observation of the 13 cases led not only to the conclusion that no *prima facie* case could be made out for a more extensive trial of the treatment, but also to the "very unpleasant impression that the effect of the treatment was harmful," the mental symptoms being aggravated, the suppurative fever higher, and the septic sequelæ more numerous.

A reply to Ricketts and Byles's paper, from the pen of the late Prof. Finsen[4], has appeared quite recently. The chief objection urged by him against their conclusions is that they did not apply the treatment sufficiently early, and so suppuration of the vesicles was not prevented. But on turning to Ricketts and Byles's paper it appears that the treatment was commenced during the papular stage in 7 of the 13 cases, and in the early vesicular in the remaining 6. As these observers pointed out, if good results are to be obtained only in those cases in which the patient is placed in red light before the eruption begins to come out, then the method is not applicable to hospital patients, for it is seldom that patients are admitted at so early a period of the disease.

*Amaas, or Kaffir Milk-pox.*—De Korti[5] gives an account of a small outbreak of this disease observed by him at Graaff Reinet, Cape Colony. Amaas is a disease which he defines as "a specific, contagious, eruptive fever closely resembling small-pox in appearance, yet differing from it in some respects." The following are the differences:—

1. Europeans, even though unvaccinated, are almost immune to amaas; and, *cæteris paribus*, aboriginal natives are more prone to it than are half-castes.

2. Amaas has a low mortality at all ages among the unvaccinated.

3. Amaas is milder amongst children than amongst adults.

4. There is no secondary fever, even in confluent cases. Pustulation occurs earlier, and is a more gradual process than in small-pox.

5. When scars result from the eruption, they consist of irregular, stellate depressions, with worm-eaten edges.

6. The vesicles are not so completely loculated as in small-pox.

7. The course of vaccinia in the subjects of amaas, after the latter disease has run its course, is undoubtedly delayed and modified to a varying degree in all those experimented on. The vaccinations were

done between the third and fifth weeks after the commencement of the eruption.

The author gives a table in which are compared the different features of amaas, small-pox, the variola-like disease described by Brownlee and Thomson (Glasgow), and the "varioloid varicella" of Izett Anderson. From this table it appears that amaas cannot well be confounded with these two last-named diseases, but that the differences between it and small-pox are more of degree than kind. So that very likely amaas is a mitigated form of small-pox.

References.—[1]*Johns Hop. Hosp. Bull.* Aug. 1903; [2]*Brit. Med. Jour.* June 6, 1903; [3]*Lancet*, July 30, 1904; [4]*Ibid*, Nov. 5, 1904; [5]*Ibid*, May 7, 1904.

**SNAKE POISONS.** *J. W. W. Stephens, M.D.*

Lamb[1], working on the poison of the banded krait (*Bungarus fasciatus*) arrives at the following conclusions: (1) The intoxication produced by this poison is due (*a*), to intravascular thrombosis following intravenous injection of the poison; (*b*), to acute nervous symptoms indistinguishable from those produced by cobra venom; (*c*), chronic cases ending fatally from the sixth to the twelfth day after injection of the poison. Such cases are peculiar to this poison, and show marked primary degeneration of the cells of the central nervous system. (2) Injected directly into the blood stream in large quantity, it produces an increase in coagulability. In the chronic cases there is a deficiency in coagulability. (3) The poison has only a slight action on the blood corpuscles. (4) The venom is far less toxic than that of the cobra or daboia. (5) The venom is not neutralized by Calmette's serum, or by that of Tidswell, prepared from a colubrine snake, *Hoplocephalus curtus*.

Rogers[2] divides the poisonous snakes into two main divisions, according to the physiological action of their venoms: (1) The colubrine class, which also includes the *Hydrophidæ* or sea snakes. These kill by paralysing the respiratory centre; (2) The viperine class, *e.g.*, the Indian *Daboia* and the African puff-adder, the pit vipers, including the rattlesnake of America and *Trimensurus* of India. The one action common to all these venoms is a rapid failure of the circulation, due to paralysis of the vasomotor centre in the medulla. A venom possessing a mixed action is that of the banded krait (*Bungarus fasciatus*) and that of some of the Australian colubrines. Rogers has confirmed the work of earlier observers, that Calmette's antivenene is not efficacious against all snake poisons, as claimed for it, but only against the colubrine venom. [The antivenene is prepared mainly from colubrine poison.]

Treatment.—**Antivenene** is best given intravenously. Rogers has re-investigated the use of **Permanganate of Potash,** locally, and recommends its use in all cases of snake bites. An instrument devised by Sir Lauder Brunton consists of a blade with a receptacle in the handle containing crystals of permanganate. The snake bite is incised, a ligature is placed above the site of puncture, and the solid crystals

slightly moistened are well rubbed in. In the case of viperine poison, instead of antivenene **Adrenalin Extract** is suggested.

Elliot[3], in a research on cobra venom, concludes that:—

1. It acts directly on the muscular tissues of the blood-vessels or their vasomotor nerve endings, constricting them.

2. It also kills the isolated frog's ventricle in a position of firm systole. Atropine intensifies this action, so is a dangerous remedy.

3. On the isolated mammalian heart it exercises a double action: (*a*), a directed action on the muscle fibre, as in the frog's heart; (*b*), an inhibitory action on the intra-cardial vagal mechanism.

4. Subcutaneously, in low lethal doses, cobra venom kills by paralysis of the respiratory centre. The convulsions which precede death are asphyxial in character. In large doses, death may take place by cardiac failure before the respiratory centre has failed.

5. In low lethal subcutaneous doses it raises the blood pressure.

6. Cobra venom in large doses, especially intravenously, causes: (*a*), a sudden fall of blood pressure, due to direct action of the poison on the vagal centres in the medulla; (*b*), a subsequent rise, if the fall has not been too great; (*c*) A final fall to zero.

References.—[1]*Sci. Mem. of Officers of the Army of India*, No. 7; [2]*Brit. Med. Jour.* Sept. 17, 1904; [3]*Ind. Med. Gaz.* May, 1904.

**SPHENOIDAL SINUSITIS.** (*See* Nasal Accessory Sinuses.)

**SPINE (Surgery of).** *Wm. Thorburn, F.R.C.S*

*Tuberculous Disease.*—Tunstall Taylor[1] describes many varieties of **Kyphotone,** by means of which he reduces the angular deformity in Pott's disease, before the vertebræ are ankylosed in their false position. Having reduced the deformity, he applies a plaster jacket to the corrected spine, and claims that he thus completely transfers the superincumbent weight from the diseased vertebral bodies to the healthy articular processes. In cases occurring above the sixth dorsal vertebra, he employs also a steel **Back-brace,** with a head support or throat strap.

Jackson Clarke[2] recommends **Costo-transversectomy** for the drainage of tuberculous abscesses of the spinal column, associated with a paraplegia which does not improve with rest. He holds that drainage through a laminectomy wound almost certainly involves infection of the path along which the abscess has been evacuated. "The tissues about the whole circumference of the cord may become infiltrated by tuberculous invasion, and permanent damage to the spinal cord—whether by constriction or by myelitis—may ensue. Laminectomy also weakens the spine at the seat of the disease by the removal of the sound arches."

Brook[3], of Lincoln, also reports a case of total paraplegia due to caries of the middle dorsal vertebræ, in which he performed costo-transversectomy with complete recovery. The patient, before operation, became steadily worse during six weeks' rest in bed.

Tillmanns[4], in advocating operative treatment, when conservative treatment has failed to relieve a spondylitic paraplegia, holds that, in cases of paralysis in which the tuberculous process is still active, and the pressure is due to the exudate from the vertebral bodies encroaching on the spinal canal, operation should consist in exposing the diseased focus by excising one or more transverse processes, evacuating the abscess, gouging and draining. He advises that **Laminectomy** should be performed in the subsiding stages of Pott's disease when the paralysis is caused by dural adhesions, or by the narrowing of the canal with newly-formed bone, or by excessive formation of connective tissue around the dura mater. He has never observed any weakening of the spinal column as a result of this operation. He has performed the operation on eleven patients, with favourable results and no deaths.

*Infective Osteomyelitis.*—A good deal of attention has recently been bestowed upon the rare cases of vertebral disease due to infections other than those of tubercle and syphilis, and Ramsey Hunt[5] gives a careful summary, with notes of two personal cases. Analysing 62 published cases, he finds that the disease is practically limited to the period of ossification, 49 cases occurring in the first ten years of life. Exciting causes are strains, blows, excessive fatigue, exposure to wet and cold, and septic lesions, such as furuncle and the puerperium. The disease is twice as common in males as in females. The organisms found in 20 cases were: Staphylococcus pyogenes aureus in 15; staphylococcus pyogenes albus in 1; streptococcus in 2; staphylococci and streptococci in 1; micrococcus tetragonus in 1. Any vertebræ may be attacked, the lumbar region being the seat of election, and the disease may attack the body (anterior osteomyelitis) or the neutral arch (posterior osteomyelitis). The anterior variety leads to the formation of retropharyngeal, psoas, mediastinal, and pelvic abscesses; the posterior to more superficial suppuration in the muscles of the back.

Three grades are recognized. In the mild form the lesion is mainly periosteal, and bone is not denuded. In a more severe form we have subperiosteal abscesses. In the gravest form "the bone and marrow are riddled with abscesses," and we have formation of sequestra. Pyæmia and extension to the meninges or cord are common. Fifteen cases developed symptoms of compression of the cord, nine others presenting *post-mortem* evidence of extradural abscess. Extensive acute suppurative perimeningitis is not rare, and is generally posterior to the cord, which is affected by pressure only. Spinal curvature was present in six cases only, the enforced recumbency and rapid course rendering improbable the development of this common symptom of tuberculous osteitis. The onset is generally acute, with high fever and the general symptoms of osteomyelitis; in the spine is felt intense pain—local or generalized, and often associated with lancinating pain from pressure on nerves. Local swelling and œdema is a common sign of great diagnostic value. Intense local tenderness is also common,

but, in contrast with tuberculosis, there is rarely pain on vertical jarring of the spine. The early symptoms are followed by the development of abscesses and septic conditions, or of pressure upon the cord which resembles other transverse lesions, or may ascend like a Landry's paralysis.

Apart from early operation the prognosis is exceedingly grave, but has been much reduced of late years by early diagnosis and operation. The diagnosis, unfortunately, is often missed; and of cases not operated upon, only two recovered. The treatment consists in early evacuation of the pus.

Having described suppurative osteomyelitis of the vertebræ, Hunt proceeds to show that cases of so-called primary suppurative perimeningitis are probably of this nature, the osseous lesion having been overlooked. [For further details concerning this rare but important condition, see the *Medical Annual* for 1897, p. 598.]

Chemine[6] deals with a somewhat different aspect of vertebral osteomyelitis or infective spondylitis, his remarks relating to the "typhoid spine" and other similar conditions of lesser intensity. These conditions are "characterized by intense pain situated in the lumbar vertebræ, with fever, swelling of the affected area, sensory and motor troubles in the lower limbs, and sometimes also of the bladder and rectum." Fränkel found Eberth's bacillus in the vertebræ of all patients dead of typhoid fever, and in one case which also had pneumonia, this was associated with diplococci; in erysipelas he found streptococci; in pneumonia, diplococci; and in various forms of suppuration, staphylococci. It thus appears that in many infective diseases the vertebral medulla is invaded by these organisms. Hence result inflammations giving rise to various forms of spondylitis, which usually subside, but occasionally culminate in suppurative osteomyelitis as above described. It is thus of the utmost practical importance in convalescence from fevers, to avoid all overexertion of the back, and all risk of blows and strains.

*Injuries.*—Walton[7] states that he has seen sixteen cases of dislocation of the cervical vertebræ without severe injury to the spinal cord. He describes the head as assuming in unilateral dislocations a position similar to that found in torticollis. In the case of a dislocation, however, the sterno-mastoid muscle on the affected side is relaxed, and not contracted as in torticollis. In bilateral dislocation, the head will be carried forward and tilted backward. **Reduction**, according to Walton, is safe, easy, and extremely successful. The patient is placed in a sitting position. The head is pressed in the opposite direction to that in which it is tilted by the deformity. Slight rotation in the same direction as the rotary deformity may be necessary to free the articular process, and then the head is so rotated as to bring the spinous process to its normal position. No traction should be used. Walton states that of the seven cases he has met with since proposing this method of reduction, two have been replaced in sleep

three during transit, and two by the operation itself. He describes the accident as being caused by very slight excessive movements of the neck. In most cases of unilateral dislocation there is no paralysis; but Walton found paralysis in two cases, and spastic paralysis in a case of bilateral dislocation.

*Spina Bifida.*—Robinson[8] reports a case of spina bifida (meningo-myelocele) in which the tumour made its exit through a defect at the side of the spinal column, and formed an intra-abdominal cyst. The whole cyst was excised, but the child died ten days after the operation. [The writer has seen lateral meningocele which recovered spontaneously after having been ruptured.]

*Tumours.*—Israel[9] records a case of spinal paralysis from pressure of a chondro-sarcoma. This involved the body of the sixth dorsal vertebra, and was removed with a sharp curette. The patient experienced great relief, although there was not complete restoration of function; but, of course, recurrence is to be expected.

Cushing[10] has published a case of intradural fibro-sarcoma of the cervical meninges. The tumour was removed in November, 1903, from a man aged thirty. Root symptoms had first appeared eighteen months before, and symptoms of compression of the cord had been present for about six months. The paralytic symptoms improved immediately after the operation, and in three months there was no trace of paralysis, and the patient had resumed work. A point of interest in the operation was that one posterior nerve root had to be resected to accomplish the complete removal of the tumour. It could not be positively stated which nerve root was sacrificed. The result was that an area of partial analgesia and thermo-anæsthesia appeared, which is described as occupying the following position: "On the posterior and outer side of the upper arm reaching above to the level of the deltoid insertion, its anterior edge corresponding with the outer bicipital groove. The area extended down the back of the forearm to the wrist, including the external condyle, leaving the olecranon free, and with its lateral boundaries about in correspondence with the most superficial edges of the radius and ulnar when the forearm was semi-pronated." This area was noticed for the first time forty-eight hours after the operation, and faded gradually until the tenth day, when the normal sensibility to pain and thermic impression had returned. At no time was there any appreciable dulling of the tactile sense over the field, thus bearing out the results of Sherrington's recent experiments upon apes, which show that the overlapping between the cutaneous fields of adjoining segments is greater for the nerves conveying tactile sense than for those of pain and temperature.

REFERENCES.—[1]*Johns Hop. Hosp. Bull.* Feb. 1901; [2]*Pract.* Sept. 1903; [3]*Lancet*, Feb. 1904; [4]*Arch. f. klin. Chir.* Bd. 69, Hft 1 and 2; [5]*Med. Rec.* April 23, 1904; [6]*Med. Press*, Jan. 6, 1904; [7]*Boston Med. and Surg. Jour.* Oct. 22, 1903; [8]*Med. Press*, May 13 1903; [9]*Berlin klin. Woch.* June, 1903; [10]*Ann. Surg.* June, 1904.

**SPIRILLOSIS.** *J. W. W. Stephens, M.D.*

Cook[1] records the presence of spirillar fever in Uganda, Hill[2] from Pak-hoi, Hong-kong.

Spirillosis in Fowls.—Levaditi[1] contributes an interesting study of this disease in fowls, previously investigated by Marchoux and Salimbeni[2]. Other birds besides fowls are susceptible, *e.g.*, pigeons, larks, etc.

*Incubation Period.*—Spirilla may appear as early as twenty-four hours after inoculation, but generally at the end of forty-eight hours. The blood is, however, infective before the spirilla can be detected microscopically.

*Infective Period.*—The disease is accompanied by a leucocytosis, and an especial feature is the appearance of large non-granular mononuclear leucocytes full of vacuoles. Towards the end of the disease, a characteristic feature is agglutination of the spirilla.

*The Crisis.*—The spirilla multiply enormously till the fifth or sixth day, then in a few hours they *completely disappear* from the blood. Up till the last, the spirilla are apparently quite normal in appearance. In the organs, especially in the spleen and bone marrow, they can now be found taken up by phagocytic cells, and to their agency Levaditi ascribes the phenomenon of the crisis.

The serum of fowls that have recovered from the disease is exceedingly *toxic* for infected fowls, though harmless to healthy fowls. This action is due to a strong agglutinating action on the spirilla, and at the same time to agglutination of leucocytes about the spirilla. The total result of this is to produce capillary emboli in the lung and nervous system, leading quickly to a fatal result.

References.—[1]*Jour. Trop. Med.* Jan. 15, 1904; [2]*Ibid.* Feb. 1, 1904; [3]*Ann. de l'Inst. Pasteur*, p. 130, 1904; [4]*Ibid*, p. 569, 1903.

**SPLEEN (Surgery of).** *A. W. Mayo Robson, F.R.C.S.*

*Rupture of the Spleen.*—The spleen is one of the most friable of the abdominal organs, and external violence is prone to produce laceration. M. Pellereaux has described a laceration of the spleen resulting from a mere down-slip while walking in the street. A blow from a cricket ball has also caused the injury in a boy, 10 years old. A common cause is the passing of a cart wheel over the abdomen.

An explanation of spontaneous cases of rupture is probably sudden increase of the intra-abdominal pressure, *e.g.*, Sir James Simpson's case of rupture of the spleen during labour, and Mr. Atkinson's (Leeds) case of rupture of the spleen during vomiting.

Symptoms of rupture are those of internal hæmorrhage. The rapidity of onset of symptoms varies greatly. In some cases, death occurs in five minutes; in others, days have elapsed before a fatal issue. In these probably the rent in the capsule was small at first and afterwards grew larger.

Treatment.—Operation. No hesitation need be felt in removing

a ruptured spleen: it is the only treatment. J. Bell, of Hong-kong, successfully excised a ruptured spleen in a malarial subject. Pels-Lensden, at the German Surgical Society (1904), showed a patient upon whom he operated successfully for gunshot wound of the spleen and diaphragm. Irving Haynes[1] successfully removed the spleen from an Italian boy, aged nine years. The organ was ruptured by the wheels of a light buggy passing over the body.

Jepson and Albert[2] record a case of primary sarcoma of the spleen treated by splenectomy. The patient was a girl, aged fifteen, and symptoms had been present for five months. The patient made an uneventful recovery. In their paper, the authors give an excellent review of the cases of tumour of the spleen treated by splenectomy.

*Splenectomy for Banti's Disease.*—Levison[3] reports a case where he removed the spleen in Banti's disease with good results. He believes that much can be accomplished by surgical measures, and that early operation offers a favourable prognosis. The gravity of the operation increases *pari passu* with the size of the spleen, and the disease, if not surgically treated, usually terminates in death.

Quenu and Duval[4] contend that operative treatment is indicated in extreme enlargement of the spleen. It is not required in every case of Banti's disease, but only in those where there is splenomegaly. Splenectomy acts on the general condition, and probably on the hepatic lesions, but it cannot be positively admitted that the operation itself can ameliorate or cure them.

*Abscess of Spleen.*—Muscatells records a case of abscess of the spleen in a woman, aged thirty-two. She was attacked by sudden and severe febrile illness a week before admission to hospital. Broncho-pneumonia was detected in the right lung, and there was some jaundice. The blood serum gave a positive Widal reaction (1 in 40) and Eberth's bacillus was obtained from the spleen by puncture. The sputum contained Fränkel's diplococcus. The broncho-pneumonia cleared up, but three weeks after operation the patient was seized with severe pain in the left hypochondriac region. The spleen became enlarged, and appeared to fluctuate on palpation. A swelling also appeared in the right thigh. The abdomen was opened under cocaine-adrenalin anæsthesia, and a huge abscess was evacuated. The abscess, which was bounded above by diaphragm and on the right by the stomach, contained necrotic pieces of spleen and some blood-stained pus. The abscess in the thigh was also drained. The pus from the splenic abscess contained a lanceolate diplococcus, capsulated and resisting Gram's stain, but no cultures were obtained. The pus from the abscess in the thigh gave colonies of Fränkel's diplococcus.

Moraczewski[5] describes the fever course due to pneumonia in a patient whose spleen had been removed seven months previously. During the illness the leucocytes fell from 50,000 to 8000. In the urine the phosphates increased as the leucocytes diminished, but no

other special differences were noted. As the white cells increased, the calcium excretion also increased, a fact which may possibly be explained by the metabolism of the increasing cells. For three days the iron and indican increased. The course of the fever was exactly the same as that in individuals who had not been splenectomized.

References.—[1]*Ann. Surg.* Feb. 1904; [2]*Ann. Surg.*; [3]*Ibid.* Oct. 1903; [4]*Rev. de Chir.* No. 10, 1903; [5]*Berl. klin. Woch.* Nov. 2, 1903.

**SPLENO-MEGALY (Tropical).** (*See* Leishman-Donovan Bodies.)

**STENOSIS OF LARYNX.** (*See* Larynx.)

**STOKES-ADAMS' DISEASE.** *Prof. A. H. Carter, M.D., F.R.C.P.*

Osler[1], in an excellent paper on this subject, says that Stokes-Adams' disease is a clinical condition characterized by (1) A profound disturbance in the automatic mechanism of the heart—true bradycardia, hemisystole (false bradycardia), and allorythmia; (2) Nervous symptoms—vertigo, syncope, pseudo-apoplexy, and epileptiform attacks; and (3) Secondary symptoms—Cheyne-Stokes breathing, cardiac asthma, angina pectoris, and the vasomotor accompaniment of profound heart-shock. The *post-mortem* changes are not constant. In a few cases coarse lesions of the nervous system have been found; in a small number no lesions whatever; in a large proportion of the cases arteriosclerosis is present. The clinical picture is very variable—there are acute, rapidly fatal cases, chronic cases in which for years the patient has slow pulse with syncopal or pseudo-apoplectic attacks, and forms in which slight but well-characterized attacks occur at intervals in persons apparently well.

The condition presents three chief varieties: (1) A post-febrile group, following, more rarely, in the course of an acute infection; (2) A neurotic group, with coarse lesions of the nervous system, as pressure on the medulla following injury, narrowing of vertebral canal, tumour pressing on the vagus, and degeneration of the vagi; and (3) An arteriosclerotic group. His cases, 15 in number, were all males, and were all of the arteriosclerotic type, and he divides them into three categories: (*a*) Acute severe cases; (*b*) Senile cases; and (*c*) Cases of slow pulse, with occasional syncopal attacks in younger healthy men. An adequate abstract of a paper so full of detail cannot be given within the space at disposal, but it will repay a careful perusal.

In all cases and in all forms the outlook is bad. In a few instances, in young persons, recovery has taken place. The disease may last for many years. In younger patients with arteriosclerosis it may be worth while to try the remedies which some think may have an influence on the sclerosis. Certainly, if there is a history of syphilis, **Iodide of Potassium** should be used. With high tension **Nitrites** are indicated. In the senile form with vertigo, he doubts if it is expedient to do more than to keep the bowels open and to see that too much food is not taken. The nitrites seem to be helpful in some instances when given

freely, in others they are useless. So far as he knows we have no remedy at our command which will accelerate a permanently slow pulse. **Atropine** may be tried, as Dehio suggests. A quiet, well-regulated life helps to ward off the attacks of vertigo and syncope, as in angina pectoris. Emotional disturbances and over-exertion are to be avoided. In spite of the utmost care and most persistent treatment, a patient's life may become a burden with the recurring seizures. For the syncope, **Nitrite of Amyl** and strong **Ammonia** may be used. When there is a warning, as sometimes is the case, their use may prevent an attack. **Brandy, Ether,** and the strong **Cardiac Stimulants,** may be necessary to revive a patient in a protracted attack. The epileptiform and pseudo-apoplectic attacks may sometimes be prevented by **Posture.** Stokes' patient could ward them off by hanging down the head, and in one case, rubbing the wrists violently would ward off an attack. Nothing seems to control the recurring threatenings of death ; but in Dr. Hamburger's patient **Oxygen Inhalations** are said to have given relief. With signs of dilatation of the heart and many abortive systoles and infiltration of the bases of the lungs, **Digitalis** may be cautiously tried.

Percy Kidd[2] also reports at length an interesting case of Stokes-Adams' disease. A case of "extreme bradycardia" reported by Norfleet[3] is evidently another example of this affection.

REFERENCES.—[1]*Lancet,* Aug. 27, 1903 ; [2]*Ibid,* Feb. 13, 1904 ; [3]*Med. Rec.* Nov. 21, 1903.

**STOMACH (Disorders of).** (*See also* DYSPEPSIA, GASTRIC DISORDERS, and SITOPHOBIA.)

*Prof. Boardman Reed, M.D., Philadelphia.*
*Walther E. Rahte, M.D., Philadelphia.*

*Chronic Gastric Catarrh.*—Under this title Aaron[1] discusses at length atonic or asthenic chronic gastritis. He shows that most of the symptoms may be lacking, and the diagnosis is therefore at times "the most difficult in the entire pathology of the stomach." It cannot usually be made certainly from the symptoms and an external examination alone. The treatment must be dietetic, mechanical, and medicinal.

The food should be easily digestible, simple, unirritating, as nourishing as possible, and be finely divided. Aaron does not prohibit either proteids or carbohydrates, whatever the chemism, but warns against cheese, foods rich in cellulose, and all those which ferment easily, those which can irritate the mucosa, and alcoholic beverages. Regarding the dietetic as well as the mechanical and medicinal treatment, it is necessary to individualize, and be governed largely by the results of the analyses of the gastric contents ; but particular foods generally suitable include broths, soups and purées, tender meats, young roast fowl, scraped meats, gelatinous foods, meat powders, soft-boiled eggs, peptones, somatose, nutrose, milk (except when the stomach is found to contain no rennin), and cooked fruits. For beverages, cocoa, tea, pure water, and mineral waters that do not contain much $CO_2$.

For the mechanical treatment, Aaron recommends above all else **Lavage** with luke-warm water containing sodium chloride, sodium bicarbonate, or lime-water, and prefers to have it done at night. The Priessnitz poultice he finds useful to control pain. He also advises hydrotherapeutic measures and light massage, but not electricity. Moderate exercise he considers indispensable.

The medicines chiefly relied on are the **Bitter Tonics,** and **Hydrochloric Acid** in large and repeated doses, when lacking in the stomach contents; but he urges that the latter should be administered in capsules to prevent an injurious action upon the teeth. When HCl is entirely absent, he administers **Pancreatin** with some alkali, and in cases of atrophy advises the alkaline waters as a help to cleanse away the mucus. The preparations made from the Carica papaya plant (papoid, papaine, etc.) may also prove helpful substitutes for the gastric juice.

*Atonic Dilatation of the Stomach.*—Some novel and striking views on this subject have been brought forward by Turck[2]. After considering at length the physiology of muscle fatigue and relaxation, the visceral movements involved in the processes of digestion, and the *rôle* of the nervous system in the same, he describes the diet found by him most useful in curing gastric atony. In the worst cases he begins by restricting the patients to a **Single Meal Daily**; this to consist mainly of bland and liquid or semi-solid, highly-nourishing food, so prepared as to be as digestible and palatable to the patient as possible. In one case he gave 100 grams of breast of chicken finely ground, 100 grams mashed potatoes, 100 grams toasted bread, 30 grams of hot, rich milk, first coagulated with rennet, and then shaken back to liquid and heated. These make up 1000 calories only, instead of the 3000 ordinarily allowed for an active person, but Turck insists upon much rest in such cases, especially upon two hours of perfect rest recumbent after eating, and finds that patients recover stomach tone faster when thus limited at first. Water is given additionally by enema. Later two meals a day are allowed. Turck also exercises atonic stomachs by a mechanical apparatus which he describes.

*Electricity in Diseases of the Stomach.*—Marshall[3] summarizes some of the recent literature, referring especially to the experience of Stockton and Einhorn in relieving gastralgia by means of the **Galvanic Current** applied within the stomach. He reports one case of stubborn vomiting which he controlled by the use of the **Faradic Current,** with the negative pole inside. He states that, finding it difficult in some cases to insert the Einhorn deglutible electrode, he covered a fine wire with a small rubber tube so as to give it sufficient stiffness to permit of pushing it into the stomach. The external pole he divides, using a Y cord with a sponge pad over the stomach, and a small sponge electrode placed alternately over the pneumogastric nerves on either side of the neck. Marshall discusses at length the views of various authors as to the effect of the forms of electricity upon gastric secretion,

but seems to have overlooked the fact, first announced by Reed and since confirmed by Herschell and various others, that while the low-tension coils usually increase secretion, at least at first, the high-tension coils with fine long wire and rapid interruption, tend to lessen it.

Ferrannine[1], in the treatment of various gastric affections, has employed an improved intragastric electrode connected with the positive pole of a galvanic battery, after having introduced into the stomach a solution of the indicated medicine. In this way he has been able by cataphoresis to have the medicaments absorbed much more rapidly and with more marked effect than was otherwise possible. The drug was usually dissolved in half a litre of water, a current strength of about 5 ma. was used, and the duration of the sitting was from five to ten minutes. In one very chronic case of anachlorhydria with constant vomiting, **Strychnia** administered in this way stopped the vomiting in a few days. In excessive gastric secretion, like curative results followed the administration of **Atropine** by cataphoresis.

Herschell[5], dealing with this subject, has described in detail the methods of employing not only the continuous current (galvanism), but also the induced current (faradism), both low and high tension, and high-frequency, polyphase, sinusoidal, and the Morton currents, in numerous different diseases of the stomach, etc. Among these were included gastric hyperæsthesia, the derangements of gastric secretion, gastric atony and dilatation, chronic gastritis, gastric neurasthenia, and constipation. The descriptions of the various applications cannot well be summarized within the space at our command, and the reader interested is referred to the original paper. He has more recently contributed another paper entitled "The Use of High-Frequency Currents in the Treatment of some Affections of the Digestive Organs."[6] He describes in detail the various forms of apparatus by which such currents can be produced, and points out the various gastro-intestinal affections in which they are most useful.

Einhorn contributes two papers on **Radio-therapy**; (1) An account of instruments devised by him for giving radium treatments in the œsophagus, stomach, and rectum[7]; and (2) A report of observations made by him and others with such treatment in the localities named[8].

1. The instrument for treating the stomach, called by Einhorn a radium receptacle, is a capsule of glass, aluminium, or hard rubber, similar in size and shape to that enclosing his deglutible electrode, and attached to a silk thread by means of which, after having been swallowed and left in the stomach about an hour, it can be again withdrawn. The radium receptacles for the œsophagus and rectum are much the same, except that they are attached to bougies. They are introduced to the point where the disease to be treated has been previously found to be situated. Radium was employed by this method for three weeks in one case of intragastric tumour, supposedly

malignant, with some encouraging results, the tumour seeming to have lessened, and the pain to have decreased during that period.

2. In the second report[8] experiments are described demonstrating that hard rubber is the preferable material for the radium receptacles, and that it may be used to advantage as a means of transillumination of the stomach, thoracic organs, rectum, and sigmoid. Nine cases of cancer of the œsophagus are reported, in which radium was employed by means of the Einhorn receptacle, and in six of these there was for a time an improvement of the stricture, so that food could be more easily swallowed. In some of them the pain was diminished.

*Syphilis of the Stomach.*—Because of its infrequency, syphilis of the stomach has been given but little consideration in the differential diagnosis of diseases of that organ. C. F. Hoover[9] reports three cases of syphilis of the stomach, all of which presented entirely different symptoms. In none of them was there a palpable tumour or an area of maximum tenderness. Two had pain and vomiting after the ingestion of food. In one case the stomach was dilated a hand's breadth below the umbilicus : retention of chyme and vomiting were continually present. In two there was a clear history of syphilis sixteen to twenty years previous to the time of observation. **Potassium Iodide** was administered in doses of 10 grs. three times a day. Two of the patients recovered, but the third, who was moribund when first seen, died a few days later. Hoover states that, unless the physician is strongly impressed with the possibility of syphilis being the etiological factor, iodide of potassium should not be given, on account of its irritating properties to the stomach. On the other hand, the varied characters of syphilis of the stomach, and the symptoms it may produce, have so many points in common with other diseases, that the diagnosis during life must rest finally on the therapeutic test.

References.—[1]*Med. Standard,* June, 1903 ; [2]*Jour. Amer. Med. Assoc.* Mar. 26, 1904 ; [3]*Med. Rec.* Aug. 8, 1903 ; [4]*Rif. Med.* Jan. 6, 1904 ; *New York Med. Jour.* Feb. 13, 1904 ; [5]*Brit. Med. Jour.* Oct. 24, 1903 ; [6]*Inter. Med. Mag.* Dec. 1903 ; [7]*Med. Rec.* Mar. 5, 1904 ; [8]*Ibid,* July 30, 1904 ; [9]*Cleveland Med. Jour.* Sept. 1904.

**STOMACH (Surgery of).** *A. W. Mayo Robson, F.R.C.S.*

The greater number of cases of stomach ailments are purely medical from first to last. There are dyspeptics from alcohol, over-eating, mental anxiety, and neurasthenia, and they can be cured by rest and general treatment. In organic disease, such as ulcer with its various complications, medical treatment and rest, both physical and physiological, can also effect a cure in a great proportion of cases. But in relapsing ulcer, in recurrent hæmorrhage, and in perforation, the literature of the past year shows more than ever that surgery offers a better outlook than prolonged medication.

In *cancer* of the stomach, from beginning to end, surgical treatment is alone capable of doing good, for beyond giving relief to pain medicine

is here practically powerless. In a lecture on the importance of an early diagnosis of cancer of the stomach,[1] many of the arguments being repeated in my Bradshaw lecture on cancer,[2] I advanced evidence to prove :—

1. How desirable it is to make an early diagnosis of cancer in order that a radical operation may be performed at the earliest moment.

2. That it may be needful to perform an exploratory operation in order to complete or confirm the diagnosis.

3. That such an exploration may be done with little or no risk in the early stages of the disease.

4. That even where the disease is more advanced and a tumour perceptible, an exploratory operation is as a rule still advisable in order to carry out radical or palliative treatment.

5. That where the disease is too extensive for any radical operation to be done, the palliative operation of gastro-enterostomy, which can be done with very small risk, may considerably prolong life, and make the remainder of it much more comfortable and happy.

6. That some cases, thought at the time to be cancer, too extensive for removal, may after gastro-enterostomy clear up completely and get quite well.

7. That in cases of disease of the cardiac end of the stomach too extensive for removal, the operation of gastrostomy may considerably prolong life, and prove of great comfort to the patient by preventing death from starvation.

8. That even when the disease is too extensive either for removal or for a gastro-enterostomy being performed with a fair chance of success, the operation of jejunostomy may occasionally prove of service.

9. That where a radical operation can be performed, the thorough removal of the disease may bring about as much relief to the patient as does the operation for the removal of cancer in the breast, uterus, and other organs of the body, and in some cases a complete cure.

T. Crisp English[3] publishes a paper on fifty consecutive cases of *perforating* gastric and duodenal *ulcer* treated by laparotomy at St. George's Hospital, acute perforations being alone dealt with, of which 42 were in gastric ulcer, with 22 recoveries; and 8 in duodenal ulcer, with 2 recoveries. Premonitory symptoms occurred in 20 per cent of the cases, chiefly in association with chronic and severe ulceration. A quiescent period after the primary collapse was met with in a large number of the cases. Vomiting occurred in 75 per cent. The liver dullness was normal in 11, absent in 12, and diminished in 20 cases. Perforation was most common close to the lesser curvature, and rather less frequent towards the pylorus. Complications after operation occurred in 13 of the 24 successful, and in 8 of the fatal cases which survived twenty-four hours; among other complications referred to, were parotitis, pleurisy, venous thrombosis, and hæmatemesis. Seven cases were quoted presenting the symptoms and signs of perforation,

which was proved by laparotomy not to have occurred ; in three, nothing abnormal was found ; in one, blood-stained œdema of the gastric omentum ; in one, evidence of a ruptured small ovarian cyst ; and in one, appendicitis. In 13 of the 21 cases that came to necropsy other gastric ulcers were found, their most common situation being exactly opposite the perforated ulcer. Details in the operation were referred to, especially the tendency to dispense with drainage. Of the 24 successful cases, 17 had been followed up ; in 12 there had been no return of gastric symptoms ; in 4 there had been slight dyspepsia ; and in one, symptoms attributable to peritoneal adhesions.

*Congenital Narrowing of Pylorus* may be a cause of chronic gastric disease in the adult. Mr. A. E. Maylard[4] reports seven cases of the above, and draws conclusions with which I thoroughly agree, and can support by a considerable number of cases. His conclusions are :—

1. That there exists a considerable class of patients in young adult life who owe their chronic gastric trouble to a congenital narrowness of the pyloric orifice.

2. That this " narrowness " is due in many cases to an undue development of the pyloric valve lessening the calibre of the orifice to anything between the normal of 12 to 15 mm., and 2 or 3 mm.

3. That the proper treatment is gastro-jejunostomy, performed with due regard to the normal disposition of the parts after operation.

*Peptic Ulcer of the Jejunum following on Gastro-enterostomy.*—I have reported a case[5] of perforating peptic ulcer of the jejunum, treated by enterectomy and Roux's operation of gastro-enterostomy, the result being entirely satisfactory. The ulcer followed on anterior gastro-enterostomy, it being very rare after the posterior operation. Out of over 200 posterior gastro-enterostomies that I have done, in no case has peptic ulcer occurred ; but I have seen it follow on two occasions after the anterior operation.

*Hour-glass Stomach.*—From a personal experience of 23 operations[6], I consider that, though hour-glass stomach may arise from three separate causes—chronic gastric ulcer, perigastritis due to adhesions, and cancer—the deformity in itself almost constitutes a distinct disease, which is associated with a peculiar train of symptoms. The cases distinctly prove that hour-glass stomach owes its origin to definite organic disease, though doubtless very rarely it may occur as a congenital condition, just as congenital narrowing may be found at the pylorus, in the intestine, or in the rectum. As yet, however, in an experience of considerably over 1000 operations on the upper abdomen, in which the stomach could be seen and examined, and over 400 of which have been on the stomach itself, I have not met with a single case of congenital hour-glass constriction. Of the 23 cases on which I had operated when my paper was published, 19 were simple, and 4 were malignant. Of the simple cases, 11 were operated on by gastroplasty alone, and all the patients recovered ; one by gastroplasty and

pyloroplasty combined, the patient dying; as did the one in whom anterior gastro-enterostomy was performed. Of the six patients treated by posterior gastro-enterostomy, all recovered. Of the four cases of cancerous hour-glass stomach, three patients recovered, two of the cases being treated by partial gastrectomy.

*Cirrhosis of Stomach.*—John G. Sheldon[7] reported a case of this disease. The symptoms were those of chronic gastritis, and at the operation of gastro-enterostomy, the wall of the stomach was found to be 1 cm. thick. It cut with resistance, and the cut surface looked like fibrous tissue, the gastric mucosa being smooth and atrophic. He gained 36 lbs. in weight within three months of operation.

The medical treatment of gastric disorders will be dealt with elsewhere, but I would remark that the experimental researches of Pawlow[8], and those of Bayliss and Starling[9], also the Croonian Lecture, Royal Society, 1904, are worthy of careful study in order to carry out the rational medical treatment of gastric disorders.

References.—[1]*Brit. Med. Jour.* April 25, 1903; [2]*Lancet*, Dec. 3, 1904; [3]*Brit. Med. Jour.* Nov. 28, 1904; [4]*Ibid*, Feb. 20, 1904; [5]*Royal Med. and Chir. Soc. Trans.* vol. 87; [6]*Lancet*, Jan. 2, 1904; [7]*Ann. Surg.* March, 1904; [8]*Work of the Digestive Glands*, tr. by W. H. Thompson, 1902; [9]*Proc. Roy. Soc.* vol. 69, 1902.

**STRABISMUS.** (*See* Vision, Defects of.)

**STRANGULATION, Intestinal.** (*See* Intestinal Disorders.)

**STRICTURE OF INTESTINE.** (*See* Intestinal Disorders.)

**SYNOVITIS (Gonorrheal Metastasis).** *Priestley Leech, M.D., F.R.C.S.*

Nobel[1], from a study of 23 severe cases of this disease, comes to the following conclusions: The poison is conveyed by the blood stream; traumatism is of some importance in localizing the metastases. The poly-articular form is just as frequent as the mono-articular. In some cases the metastatic complications are due to a secondary infection, and not to the gonococcus itself; and the theory that it is due to absorption of a toxin is untenable. The tendon sheaths and bursæ are also often affected. From the commencement of the local infection to the appearance of the joint metastases there was an interval, varying from a few weeks to some months. In men, the seat of the gonorrhœa was in the posterior urethritis in 16 cases out of 18.

Treatment consists in removal of the cause; anti-rheumatic remedies seem to be of little value; rest of the joint and immobilization are useful, care being taken that stiffness does not ensue.

Reference.—[1]*Wien. Klin.* Mai, 1903; *Deut. Med. Ztg.* Nov. 16, 1903.

**SYPHILIS.** *J. W. Thomson Walker, M.B., F.R.C.S.*

Attempts to inoculate lower animals with the syphilitic virus have been carried out with two objects in view. The earlier experimenters sought by this means to study the various forms and the cause of the disease. More recently inoculation experiments have been directed towards the production of an artificial immunity in animals

for purposes of vaccination. The most striking work in this line, and that which has given the most definite results, is the inoculation of a chimpanzee carried out by Roux and Metchnikoff[1]. Material from a primary sore was inoculated in the clitoris, and material from mucous patches on the forehead of a chimpanzee, and the clitoris was again inoculated five days later. An indurated ulcer appeared on the clitoris, and secondary manifestations followed. Professor Fournier agreed that the conditions produced were syphilitic. The experimenters, although they succeeded in producing an artificial immunity in apes, concluded that for purposes of vaccination a non-living virus must be sought, by treating virulent material with various chemical and physical agents.

These experiments encouraged Lassar[2] to carry out further investigations, and he successfully inoculated a male chimpanzee by introducing portions of tissue and secretion from a primary sore into pockets and punctures in the skin of his forehead, and the ears and the mucous membrane of the mouth. Two indurated chancres were produced on the forehead, and secondary manifestations appeared later.

Another line along which the investigation of the pathology of syphilis has been pursued is the endeavour to isolate an organism which may be the cause of the disease. Wallsch[3] has carried out an investigation in regard to the presence of the bacillus described by Niessen. A bacteriological examination of two excised chancres, and enlarged inguinal glands from two cases, showed that the bacillus was not present in the former, but existed in pure culture in the latter. In 16 of 35 cases of secondary syphilis an identical bacillus was found in the blood, and control observations of the blood of non-syphilitics showed that it was absent. It was present in the discharge of two chancres, and of a papular eruption, but was not found in the cerebro-spinal fluid. Inoculation of the bacillus in animals gave inconclusive results. Wallsch concluded that the bacillus was not the virus of syphilis, but obtained entrance into the body through primary syphilitic lesions, being commonly present in the skin.

Professor F. C. Madden, of Cairo[4], in an interesting account of "Syphilis in Egypt," gives a description of the ravages of untreated syphilis. It is only possible to quote a few points. The great majority of chancres on the male genital organs become phagedænic, unless taken in hand and energetically treated. A spreading cellulitis of the penis and groin, with septic inguinal lymphadenitis, is sometimes seen. "Not infrequently the first view of the case shows us very extensive phagedænic destruction of the penis, and, after a long course of treatment, when all the sloughing has ceased, the organ is truly but a relic of its former self, and the scrotum is also much destroyed." With all this local sloughing there is, as a rule, remarkably little general disturbance. Extra-genital chancres are common, but in spite of the very common custom of tattooing, he has never seen a

chancre produced in this way in Egypt. In the secondary period condylomata are luxuriant, and occur in all the skin folds, and even in the external auditory meatus. Rupia and serpigenous ulcerations are, however, rare. "The destructive effect of tertiary ulcerations is much more marked in the blacks than in the native Egyptian; but, all things considered, tertiary syphilis is not nearly so common as one would expect. Dr. Symmers, pathologist to the Hospital, in an experience of over 3000 autopsies, is of opinion that tertiary syphilis of the internal viscera and of the central nervous system is very rare, though he has met with isolated examples of almost all the typical lesions. It seems as if the disease burnt itself out in its primary and secondary stages."

The multiplicity of chancres is often looked upon as a sign that they are non-syphilitic. Gaillard, Lafosse, and Papegaey[5] found that in 12,069 cases of syphilis, at the Hospital Ricord, 3065 had multiple chancres. Ricord put the percentage of multiple chancres at over 25, Jullien at 33.26, and Fournier at 18.

F. H. Barendt[6] gives an account of the traces left behind after an attack of syphilis, which may be useful as additional evidence in the diagnosis of some disease from which a patient is suffering. No one of these vestiges is by itself pathognomonic, but he thinks that if two or more of them are present, we are justified in treating a disease of doubtful origin with antisyphilitic remedies. One of the most important vestiges is a depressed, irregularly marginate scar in some region of the body not usually liable to injury, and where no history of injury is given. If these scars are multiple and surrounded by pigmentation, the suspicion is strengthened. A scar on the penis is valuable, for it is indifferent whether the scar represents a soft or a hard chancre, or whether such scars are single or multiple. Scars on the sural and peroneal regions are suspicious, but those on the shins are worthless in diagnosis. Eruptions on the palms and soles, especially discrete papules with scaly surrounding rings, are suggestive. Leucoderma is a valuable sign of previous syphilis, and the surrounding pigment distinguishes it from the leucoderma which may accompany malignant disease. White scars on the lips, especially at the angles of the mouth, are of great value, and fine, irregular, opalescent streaks on the buccal mucous membrane are suggestive. In women, syphilides linger longest at the junction of the hairy scalp and the nape of the neck, and in men in the temporal region.

According to Gailleton[7], **Mercury** is vastly superior to iodides in the diagnosis of syphilitic from malignant growths. One, or at most two injections of calomel, is sufficient. Mercury never stimulates the growth of epithelioma, as iodides may, and the debilitating effects of iodism are avoided by its use.

The following points of interest are taken from two lectures delivered by Jonathan Hutchinson[8] at the Polyclinic: "I am taking for granted

that the disease which has been called *yaws* and *frambœsia* at various places, is really none other than frambœsial syphilis. With regard to our sailors having contracted frambœsia in foreign parts during the last two centuries, if there was any new disease there which they could have brought home, I contend that they would have brought it. But they have not done so ; they have not brought us yaws, they have not brought us frambœsia, but they have brought us syphilis, because yaws is the parent of syphilis, and the two diseases are really the same."

" Is it necessary, in order that the virus of syphilis shall gain access to the system, that there should be a breach of surface ? I have no doubt that in the large majority of cases of the commonest form of syphilis—that in which it is contracted in the sexual organs—no breach of surface at all occurs. It is a part which is abounding in glands, and we can imagine the virus will easily enter into the orifices of glands and be lodged there."

" Is it possible for syphilis to be induced without any chancre at all ? So far as one's facts go, we must admit that syphilis may be originated without any chancre. Certainly it is not very frequently originated without any chancre, which either the patient or the surgeon could not appreciate, even by the most careful examination."

In speaking of the peculiarities which the primary sore may assume, Mr. Hutchinson says : " One is that it may cause not a hard ulcer, but a fungating growth." " The chancres which result from inoculation of syphilis in the act of tattooing very frequently show a mass of granulation tissue like a little raspberry."

" I used to hold, and I hold still, that Scotchmen are much more liable to iritis than any other race I am acquainted with ; the most severe cases I have seen have all been in Scotch people."

" Another general fact with regard to secondary eruptions I will appeal to, and that is that they never creep at their edges—they never spread. Syphilitic rupia leaves the round shilling scar ; it does not leave a great irregular scar : it does not spread in crescents, or like a horse-shoe, as in tertiary syphilis ; it is not infective at its edge. I take it that the explanation of that is, that all the tissues have got the poison alike, so that there is no tendency for this particular local inflammation to spread into the tissues with which it is in continuity, because these tissues are already diseased ; they have got the poison."

Treatment.—In regard to the time at which treatment should be commenced, Hutchinson says : " As soon as you feel sure you have to deal with syphilis, begin the use of mercury, and push it to the full extent the patient will bear. . . I have been in the habit of giving mercury very early, and giving it with the intention of entirely anticipating and preventing the secondary phenomena. In a very great number of cases, a very large majority, it is effectual for that purpose. The symptom which it least constantly prevents is the

sore throat; and, indeed, mercury often causes sore throat. . . If you give your patient directions as to diet while he is taking the mercury, he will not have diarrhœa. I forbid most emphatically every kind of fruit, all green vegetables, and tell the patient to live simply upon beef, mutton, fish, and potatoes and bread, and give him an opium pill to take, if need be, to prevent diarrhœa. It is not desirable that the patient should be salivated, because when that happens you cannot push the mercury further. . . I also insist strongly on long continuance of the course without any intermissions."

J. Ernest Lane[9] says: "By some it is said that mercury should be commenced immediately the diagnosis of syphilis is made, while others advise delay until some secondary manifestation of the disease is present. Personally, I am rather in favour of the latter course, though I would not insist on it so strongly as I have hitherto done." If the sore and the inguinal glands are typical, he would submit the patient to treatment at once, but there is a large proportion of cases in which a positive diagnosis cannot be made until the appearance of a syphilide, either of skin or mucous membrane, and if there is the least element of doubt the treatment should be delayed. "In the case of women the diagnosis presents much greater difficulties than in men, for with them induration of the initial lesion is by no means constant, and if present, is not always easy to detect." Consequently he is in favour of never starting the mercurial course until the diagnosis is rendered incontestable by the appearance of secondary symptoms.

H. M. Christian[10], of Philadelphia, thinks it by far the safer plan to wait for the evolution of cutaneous lesions before beginning constitutional treatment. In very many, if not the majority of instances, an absolute diagnosis cannot be made from the chancre. He further contends, as "a well-developed clinical fact, that the early administration of mercury does not in any way avert the disease or prevent the appearance of an eruption. . . There is nothing to be lost and everything to be gained by waiting six or seven weeks for the natural evolution of the disease." He mentions, however, the following conditions which call for the early administration of mercury: (1) When the chancre is located on the lip; (2) When from its position it may lead to the infection of others, as on the finger of the surgeon, obstetrician, or hospital orderly, or on the nipple of a nursing woman; (3) In those rare instances where the initial lesion becomes phagedænic and threatens to destroy the prepuce or glans penis.

Anton Lieven[11], of Aix-la-Chapelle, in discussing the treatment of syphilis at that place, gives his opinion that: "So long as the chancre forms the only manifestation, and neither roseola nor mucous plaques have made their appearance, mercury should be rigidly withheld. Not only is it not always possible to diagnose a case as syphilis from the appearance of the chancre alone, but premature treatment has the effect of causing the secondary symptoms to assume irregular and

confusing forms. Moreover, the mistaking of a soft sore for a Hunterian chancre may lead to the patient being subjected to a long, useless, and possibly a deleterious course, which will reflect credit neither upon the physician nor the system."

Lieven summarizes the methods of administration of mercury. In English-speaking countries the drug is usually given by the mouth, either as a pill or in mixture. This method is open to the objections that the effects of the treatment are slow, and experience has shown that the organism rapidly excretes the drug when thus administered. Theoretically the subcutaneous injection of mercury has much to recommend it. The dosage is definite and exact. In practice the method is not free from drawbacks, especially in the hands of the inexperienced.' Either **Soluble Salts,** such as the perchloride, or **Insoluble Salts,** such as calomel, may be injected. In the soluble salts this process is extremely painful, must be repeated daily, and the drug is rapidly excreted. The insoluble salts are preferable, as their effects are more decided and more durable. They are painless, and need not be frequently repeated. When once injected, however, the degree and rapidity of absorption cannot be influenced, and toxic symptoms may appear. For these reasons many have relinquished the use of these salts, although he admits that many physicians in Germany inject **Salicylate of Mercury, Calomel,** or **Oleum Cinereum** with excellent results.

Lieven describes the Aix-la-Chapelle system "as consisting in the inunction of **Unguentum Cinereum** in conjunction with the external application and internal administration of the mineral waters (sulphur waters) natural to the place. It is impossible to quote at length from this paper, and those interested are referred to the original for the description of the methods in use. He adds a note of warning, that cases of pronounced chronic nephritis suffering from syphilis should not be sent to Aix-la-Chapelle, with the exception of those cases in which the kidney disease is favourably influenced by mercury, "proving that the case is one of syphilitic nephritis." The treatment lasts from four to six weeks, and a second course of four or five weeks should be undertaken six months later ; this is repeated six months later, then after a year, unless there are signs of relapse, when the interval between the third and fourth courses should be six months. The fifth and last course is undertaken at the end of the third year.

Karl Touton[12], of Wiesbaden, describes the method carried out at that "watering place." Of the Wiesbaden springs the Kochbrunnen is almost the only one used, and contains a large proportion of sodium chloride. The treatment consists in drinking the water and in baths, combined with mercurial inunction. Touton uses a 33 per cent ointment of mercury with a basis of resorcin, and applies it over a large surface, so that in three days the whole skin is treated. The actual inunction lasts, as a rule, ten minutes, and in this time the usual

quantity of ointment (3 to 5 grams) is so finely divided that only a film of dry, grey powder remains visible on the skin.

Louis Wickham[13], of Paris, discusses the system of **Mercurial Injection.** The dosage should be raised to the highest point that can be tolerated, but it is often difficult to discover the resistance of individual patients. An approximate idea can only be gained by "cautious experiment." The initial dose must be small in feeble patients (even when the syphilitic infection is intense), in women, children, and old men. Moderate doses may be administered at once to those who appear to be in good condition. After two or three injections the dose is gradually increased, and its limit must be fixed by "the prevalent views as to the proper maximum dose for use." The author considers that some attention should be paid to the quantity of pure mercury in the preparation used, and he gives a list of the percentages in the various salts. Now and again in those subjects in whom gluteal intramuscular injections are not well borne, and in whom it is necessary to attack the syphilis vigorously and speedily, he has employed the intravenous route. This method, he believes, has a great future before it. The following are some of the formulæ recommended by Wickham :—

1. **Soluble Salts of Mercury :**

| | | | |
|---|---|---|---|
| ℞ Biniodide of mercury | 0·10 gram | Sterilized distilled water | 10 cc. |
| Iodide of potassium | q.s. | | |

Begin with injection of 1 cc. daily, watching the patient carefully. If well borne, the injection may be raised to 3 cgrams of biniodide. The course of injection should extend over twenty-five to thirty days.

| | | | |
|---|---|---|---|
| ℞ Benzoate of mercury | 0·10 gram | Sterilized distilled water | 10 cc. |
| Chloride of sodium | 0·075 gram | | |

This is used exactly as the first.

2. **Insoluble Salts :—**

| | | | |
|---|---|---|---|
| ℞ Calomel | 1 gram | Fluid vaselin | 20 cc. |

Inject 1 or 2 cc. every six, seven, or eight days. In adults in good condition, the treatment is carried out in a series of courses lasting three or four weeks, with intervals at first of three or four weeks, and later at longer intervals. In the first twelve months, five should be devoted to treatment and seven to rest ; in the second year, there should be four months of treatment, in the third year, three.

A. F. Price[14], Medical Director of the U.S. Navy, draws attention to the use of **Copper** in syphilis. "An experience of thirty-five years in the treatment of the disease in the navy has brought the conviction that the use of copper is of value as an addition to the accepted treatment." An intolerance of the copper salt, when it exists, is characteristic of old syphilis. "It appears that in old cachectic cases of syphilis, and in the so-called parasyphilitic forms of the disease,

it is of benefit to establish a tolerance for copper sulphate, and then employ it in doses of $\frac{1}{10}$ gr. daily, and to add to this medicine blue mass in daily dose of $\frac{1}{2}$ gr. or more, if it be well borne." In the secondary stage the author recommends $\frac{1}{30}$ gr. of copper sulphate with 1 gr. of blue pill daily. (*See also* HEART, STOMACH.)

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**SYPHILIS** (Congenital). *G. F. Still, M.D.*

The earliest date at which symptoms of congenital syphilis may be apparent is sometimes a point of practical importance. Apart from the cases in which the disease affects the fœtus so severely that the infant is still-born, it is clear that in some, definite symptoms are present at birth. According to Ludovico Fini[1] the syphilitic infant is often ill-nourished, with dry and wrinkled skin, at birth, and some show actual skin lesions. The present writer[2] found syphilitic pemphigus present at birth in 2 per cent of his cases, and a history of snuffles on the day of birth in 11 per cent; the spleen, also, is enlarged at birth in some cases. But in the majority, no symptoms are evident for some weeks. Kassowitz (quoted by Fini *loc. cit.*) found that out of 124 cases, 66 showed skin lesions during the first month of life, 40 in the second month, and 18 in the third month.

But, whilst skin manifestations occur in the majority of cases of congenital syphilis as an early symptom, it is pointed out by Hochsinger[3] that other symptoms in the viscera, joints, or nasal mucous membrane may be present in the early days, whilst no eruption appears until the infant is several months older. In some cases, where the syphilitic nature of joint or visceral affections was considered to be proved by the result of mercurial treatment, no eruption had appeared when the infant was a year old.

Amongst the ocular manifestations of congenital syphilis, interstitial keratitis is frequent, and generally leaves permanent damage: but, as Sendral[4] states, there are cases in which this symptom disappears without leaving a trace. The frequency of eye affections is noteworthy. The present writer (*loc. cit.*) found syphilitic affections of the eyes in 21 per cent of his cases, and in 12 per cent the affection was choroiditis. Acute fibrinoplastic iritis in an infant aged ten weeks was recently described by Hala[5], and congenital staphyloma of the cornea by Gattenga[6]. In some infants the manifestations of syphilis are associated with a greater or less degree of pyrexia. Schwab[7] found some rise of temperature in 11 out of 19 cases.

Carpenter[8] records a case of syphilitic nephritis in an infant aged five months, in whom the nephritis was of catarrhal, not of interstitial,

variety; it would seem, however, from the few cases on record, that nephritis, when due to congenital syphilis, usually shows much interstitial inflammation. Gummata in the liver are sometimes recognizable clinically in syphilitic children, as in a case recorded by Ostheimer[9], where nodules apparently gummatous in nature could be felt on the surface of the liver, and were associated with enlargement of the liver and ascites. All the symptoms disappeared under mercurial treatment.

It is well known that congenital syphilis often interferes greatly with nutrition. According to Ravogli[10] this occurs mostly in the cases of "severe infection"; the infant loses weight, becomes very anæmic and fretful, the face is wrinkled and drawn, giving the aspect of an old person, and on this condition of marasmus, a severe diarrhœa is apt to supervene, which may prove fatal. But without causing such acute marasmus, congenital syphilis may arrest development, so that the patient remains dwarfed in body, and perhaps in mind also. Byrom Bramwell[11] records a striking instance of this in a man, aged forty-two years, the subject of congenital syphilis, whose height at that age was $4\frac{1}{2}$ feet, and his weight 4 st. 7 lb. His memory was defective, his intellectual powers imperfectly developed, and he was subject to delusions. The part played by syphilis in producing mental deficiency is considered by Shuttleworth[12] to be small; amongst 2380 imbecile children there was evidence of inherited syphilis in the child, or of syphilis in the parent, only in 1·17 per cent of the cases. For various reasons it seems probable, however, as Shuttleworth himself points out, that this percentage may be too low.

Amongst the nervous affections of congenital syphilis, cerebral palsies of one kind or another must be reckoned, although only a minority of these cases own such an origin. A case of cerebral diplegia in an infant seventeen months old, with choroido-retinitis, seemed, according to Hutchison[13], to be due to syphilitic affection of the cerebral cortex. French writers have ascribed various anomalous affections of the spinal cord to congenital syphilis; Ingebrans[14] mentions apparent examples of Friedreich's ataxia which were attributed to syphilis, and also quotes several writers as finding in congenital syphilis one cause of chorea; he also describes as instances of "hereditary parasyphilis" some cases of supposed locomotor ataxy in children and young persons, and others of general paralysis, and also of epilepsy, ascribed to the same cause.

The transmission of syphilis to the *third* generation has been much disputed. Recently Chirivino[15] has recorded two instances in which there was supposed to be satisfactory proof of such an occurrence. A girl, who showed a characteristic syphilitic eruption in her mouth at one month old, and further evidence of congenital syphilis when five years old, was the child of parents who showed no evidence of inherited syphilis in themselves, but the mother was the child of a

woman who died of malignant syphilis. In the other case, a boy who showed characteristic lesions at birth, was the son of parents who were both suffering from congenital syphilis. In a somewhat different sense Ed. Fournier[16] has recently stated that out of 192 living children born to parents, one or both of whom were the subjects of inherited syphilis, no less than 161 showed "all the dystrophic stigmata of inherited syphilis"! and 28 of these showed "virulent lesions." He adds that the dystrophies observed were identical with those seen in ordinary inherited or congenital syphilis. Describing the inherited syphilis which he considers typical, as it occurs in the third generation, he pictures "a small subject, ill-nourished, with rickety deformities of the chest and limbs, a large head, often bossed, teeth badly formed and eroded, with affections of eyes, and an unintelligent face." This seems rather vague evidence of inherited syphilis.

As to the risk of infection from congenital syphilis, there has been much difference of opinion. Coutts, in his *Hunterian Lectures*, said: "That inherited syphilis is occasionally contagious is certain, but it is equally certain that the virulence of such contagion has been grossly and vastly over-estimated." Ravogli (*loc. cit.*) says, that in the care of a syphilitic infant the danger of infection must always be remembered; he quotes two instances in his own experience.

Treatment.—During the period of the syphilitic eruption on the skin Ravogli recommends a **Bath of Bichloride of Mercury**, made by dissolving 2 to 4 tablets of 7 grs. corrosive sublimate in six gallons of warm water, so that the strength of the solution is about 1–12,000. He says that this treatment has not only a valuable local action on the skin, but also a general effect upon the disease. For the snuffling, when it is so severe as to prevent the child from sucking properly, the purulent secretion must be removed with a wet rag or some cotton-wool, and then, with an ordinary glass dropper, the following solution may be instilled into the nostrils:—

| | | | | |
|---|---|---|---|---|
| ℞ Sodium borat. | ℈ss | Aq. camphorat. | ℥ss |
| Menthol | gr. j | Aq. destil. | ℥ss |

This should be done while the infant is in the erect position, not lying on its back, otherwise it may cause some choking. Fissures about the nose, lips, or genitals should be touched with a 3 per cent solution of **Silver Nitrate**, after which the excess is washed off with plain water. For ulcerated surfaces, **Dusting with Calomel** and then covering with dry absorbent cotton-wool may be used, or an ointment may be preferable, thus:—

| | | | |
|---|---|---|---|
| ℞ Hydrarg. precip. alb. | gr. iv | Zinci oxid. | ℥ss |
| Bismuthi subcarbon. | ℈ss | Acid. carbol. | ♏ vi |
| | | Vaselin | ℥i |

For internal administration of mercury Ravogli recommends **Calomel** in doses of $\frac{1}{10}$ gr. two or three times a day, or **Hydrarg. c. Creta**, gr. j

four times a day, or it may be given in solution as the **Liquor Hydrarg. Perchlor.**; but, of the three methods he considers calomel the most useful. If there is diarrhœa, **Inunction** of mercury is preferable to the internal administration, and Ravogli recommends **Unguentum Hydrargyri** diluted with an equal quantity of vaselin, 20 grs. of this mixture to be rubbed into the soles, palms, axillæ, or back daily for a few minutes. The site chosen should be changed frequently, and the nurse should be cautioned not to wash the place soon after the rubbing, otherwise the skin may become chafed and sore. Inunctions are particularly of value where it is extremely important to get the child under the influence of mercury quickly, for instance, in cases of interstitial keratitis or of internal ear disease. Tresilian[17] says that the action of grey powder or of the solution of hydr. perchlor. is much too slow, and inunction should therefore be used.

In the present writer's opinion **Injections** of mercury or other substances under the skin, or into muscles or veins, are seldom if ever justifiable or necessary in the syphilis of children, inasmuch as it is probably always possible by inunction, or a combination of inunction with ordinary internal administration, to obtain whatever benefit is possible from mercury or iodides. But recently it has become the fashion to inject drugs into tissues or blood-vessels in all sorts of diseases, and congenital syphilis among them. Solomon[18] reports the case of a boy, five and a half years old, who was treated by intravenous injections of cyanide of mercury, 1 cc. injections of 1–100 solution being made into the left median cephalic vein, and then into the right, and on a third occasion into the dorsal vein of the foot: some syphilitic patches on the tongue improved considerably under this treatment. Schwab and Levy-Bing[19] have been using intramuscular injections of an aqueous solution of **Biniodide of Mercury** into the buttocks of infants soon after birth; the dose is 1 to 2 mgrams according to the weight of the infant; ten or fifteen injections are given, and subsequently, after a rest of fifteen days, another course of ten injections. The advantages claimed for this method are, that it is "rapid, sure, without danger, and produces an intense mercurialization which is of benefit in grave cases, such as visceral syphilis." Similarly **Benzoate of Mercury** was used by Cruchaudeau[20] for injection into a boy aged ten years, with ophthalmoplegia interna due to congenital syphilis, and after twenty-four injections there was decided improvement. **Iodine** in solution, 1 gram with 3 grams of **Potassium Iodide** in 100 grams of distilled water, has been used for intravenous injection by Spolverini, the dose injected being increased gradually up to 5 cc. The present writer[21] has emphasized the place of iodides in the treatment of congenital syphilis. There are many cases of syphilis, both in infancy and in later childhood, in which potassium iodide is of great value, particularly where gummatous conditions, or such bone lesions as epiphysitis and periostitis, are present.

Potassium iodide is well taken by children, and where there is no response to small doses, the amount may be increased until 15 or 20 grs. are taken, three or four times a day.

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**SYPHILIS (Joint Disease in).** *Priestley Leech, M.D., F.R.C.S.*

Continental surgeons have paid more attention to joint disease in syphilis than their English *confrères*. Paton[1], from a study of his own cases and of the literature on this subject, thinks the varieties of syphilitic joint-disease may be classified as follows:—

1. During the secondary stage: (*a*) Arthralgia; it may be doubted if this really is a joint trouble properly speaking, or if the pain may not be in the parts around; (*b*) Synovitis, acute or subacute; (*c*) Hydrarthrosis.

2. During the tertiary period: (*a*) Synovitis, subacute or chronic; so chronic in some cases as to be examples of hydrarthrosis; (*b*) Gummatous, the gummata being in the synovial or sub-synovial tissue; (*c*) Cases in which the bone or cartilage are primarily diseased; (*d*) Cases in which the disease has spread to the joint from the parts around; (*e*) Ankylosis, which is rather a termination of the other forms.

3. In hereditary syphilis, the joints are probably attacked more frequently than in the acquired form. The varieties seen in the hereditary disease may be classified as follows: (*a*) Simple synovial effusion; (*b*) Joint disease associated with syphilitic epiphysitis; (*c*) Primary gummatous affection of the synovial membrane; (*d*) Osteitis associated with effusion only; (*e*) Osteitis associated with gummatous disease of the synovial membrane (this is the variety which has been called pseudo white swelling); (*f*) Deforming arthritis, the *arthropathie deformante* of Fournier.

The Diagnosis of syphilitic disease of the joints is often very difficult. In the secondary stage the presence of other signs of the disease is generally the main element in the diagnosis, and in the cases of arthralgia there is really nothing else that can settle the point. The synovitis cases, and those which resemble rheumatism, are the ones most likely to lead to error. The differences from acute rheumatism are the absence of sweating, the mildness, as a rule, of the constitutional disturbance, the absence of heat and redness in the joints affected, and the fact that the heart never suffers. In gonorrhœal

synovitis there is less effusion, the fibrous elements of the joints are more attacked, and mercury and iodides have no influence.

The joint affections of the tertiary period are most likely to be mistaken for osteo-arthritis or tubercle, but they may also resemble gout, gonorrhœal disease, or some form of traumatic synovitis or arthritis. From osteo-arthritis the most distinctive points are: In osteo-arthritis there is a greater tendency to the development of new bone as osteophytes, the more marked deformity in the joints, and more probability of creaking, grating, and limitation of motion, the absence of any direct evidence of syphilis, and the effects of treatment. The cases which resemble tuberculous disease differ, in the comparatively slight pain on attempted movement, little rigidity of the muscles, and surprisingly little limitation of movement in proportion to the apparently advanced condition of disease in the joint; but collateral evidence of specific disease, and the effects of treatment, are important points in the diagnosis.

Syphilis attacks certain joints more than others; the knee is most frequently attacked—oftener than all the other joints put together; next in frequency is either the ankle or elbow-joint; then the shoulder, wrist, and some of the small joints. The hip seems to be very rarely affected.

Treatment.—This is that appropriate to the stage of the disease. Absolute rest is not necessary, and may be harmful. Counter-irritation is often very useful, especially if there should be much effusion.

Reference.—[1]*Brit. Med. Jour.* Nov. 28, 1903.

**TABES DORSALIS.** *Purves Stewart, M.A., M.D.*

Pathology.—Within the past year several interesting articles have appeared dealing with the pathogenesis of tabes. Marie and Guillain[1] have brought forward a "lympho-angiotic" theory of the disease. According to them, tabes is due to a syphilitic affection of the posterior lymphatic system of the cord. This embraces the posterior roots, posterior columns, and the corresponding part of the pia mater, forming a lymphatic system absolutely shut off from those of the lateral and anterior columns. These observers injected experimentally into the posterior column (in the dog) an emulsion of Chinese ink, and found that the foreign particles subsequently became diffused throughout the lymphatic spaces of the posterior columns alone, and did not spread into the antero-lateral regions. Hence they conclude that the lymph circulation of these regions is distinct and localized. Microscopical examination of tabetic spinal cords led them to the conclusion that the degeneration of the posterior columns is not limited to the area of the diseased posterior root fibres, but that it attacks the posterior columns diffusely, and sometimes is traceable even into the lateral columns; moreover, that the pia mater covering the posterior columns shows chronic inflammatory changes—a localized posterior meningitis—whilst the intra-spinal lymph spaces of this particular region are dilated.

Nageotte[2] maintains that tabes is due to the spread of a chronic syphilitic meningitis to the posterior roots. For the early diagnosis of the disease, examination of the cerebrospinal fluid is therefore of great value. If lymphocytosis be present in a syphilitic patient, anti-syphilitic measures must be pushed, and before irremediable damage is done to the cord itself.

The importance of the *rôle* played by syphilis in the production of tabes dorsalis becomes yearly more evident. Thus Collins[3], in a series of 140 cases of tabes, obtained a definite history of syphilis in 70 per cent, whilst in an additional 10 per cent previous syphilitic infection could not be excluded. As a contrast, he found that out of 140 cases of nervous diseases other than tabes and general paralysis· only 8·3 per cent had had syphilis. In other words, the frequency of previous syphilis is ten times greater in tabetic patients than in patients with other nervous diseases. Moreover, the rare cases of tabes in childhood or in early life are associated with congenital or infantile syphilitic infection. In Halban's[4] case of a young man of twenty-three, the patient had been infected in infancy by a syphilitic nurse. In 3 cases out of 5 recorded by Maas[5], in young women between the ages of sixteen and twenty-two, definite signs of congenital syphilis were actually visible. Idelsohn[6] also reports a case in a little girl of six years, the child of syphilitic parents. And I myself have had under observation an unpublished case of juvenile tabes in a girl of twenty, several of whose brothers and sisters had congenital syphilis.

Additional proof of the syphilitic basis of tabes (and of general paralysis of the insane) is afforded by the results of cyto-diagnosis of the cerebrospinal fluid, obtained by lumbar puncture. Widal, Sicard, and Ravaut[7] found distinct lymphocytosis in 36 cases out of 37, and numerous other writers have corroborated these observations. In cases where tuberculous meningitis can be excluded, the presence of a persistent lymphocytosis is of great diagnostic significance, indicating some diffuse syphilitic meningeal affection of the central nervous system. Lymphocytosis is often distinct in the very earliest stages of tabes, preceding the Argyll-Robertson phenomenon and loss of the knee-jerks.

But it must be borne in mind that, in all probability, syphilis is not the only antecedent factor in the production of tabes. It is well known that many syphilitics escape without any subsequent affection of the nervous system. This is not a question of the intensity of the previous attack of syphilis, for the severity of tabes is in no way proportional to that of the previous syphilis. The other factor is probably to be found in over-exertion of certain definite groups of nerve cells in the cord. It is well known that tabes is commonest in those people who habitually throw a strain upon their static apparatus. Therefore men are more frequently tabetic than women, who live more sedentary lives. And the clinical type of tabes differs according to

the particular functions that have been over-excited in each case. Thus Edinger, some years ago, recorded the case of a physician who developed the Argyll-Robertson pupil in one eye only, the eye which he habitually used in working with his microscope. And I have recorded several analogous cases[8], as for example that of a woman, a lace-maker, who usually worked sitting down. For some reason she had to do work involving prolonged standing, and shortly afterwards her legs became unsteady and ataxic. Cases of so-called "traumatic tabes," such as are met with from time to time, are probably instances of trauma, simply as an exciting cause, suddenly exaggerating a previously latent tabes.

Pal[9] offers an interesting hypothesis to explain the *gastric crises* of tabes. According to him, these are really vasomotor crises. Vascular crises occur in many different diseases associated with excessively high or low vascular tension. The pain of a crisis is due not to the viscera, but to a condition of stimulation of the sympathetic (splanchnic) nerves. Pal thinks that the blood-pressure in the walls of the abdominal viscera is enormously raised by contraction of the visceral vessels. Hence the mesenteric arteries cannot empty themselves; they become stretched and tense, pulsate violently, and stretch the surrounding tissues. In this way the solar plexus is stimulated, and a gastric crisis is the result. Gastric crises are associated constantly with distinct rise of blood-pressure, which may exceed the ordinary inter-paroxysmal blood-pressure, according to Pal, by as much as 150 per cent. In one of his cases the blood-pressure during a crisis was 240 mm. of mercury, at rest only 90 mm. This rise of blood-pressure in abdominal crises is not the result of mere pain, since no rise of pressure is produced by lightning pains, however severe. The locally heightened blood-pressure is more probably the cause of the pain in gastric crises. As the blood-pressure falls, the pain disappears. The treatment of such cases by **Morphine** relieves the pain without affecting the blood-pressure, whilst **Chloral** in analgesic doses, diminishes the vascular tension.

There is little that is new to record in the symptomatology of the disease. Ossipow and Noischewski[4] have drawn attention to the frequency of "tricho-anæsthesia," which means loss of sensation of the hairs, when stroked or pulled. In 16 cases out of 19 they found areas of tricho-anæsthesia, more or less marked.

REFERENCES.—[1]*Rev. Neurol.* 1903, No. 2, p. 49; *Presse Méd.* p. 1179, 1902; [3]*Med. News*, Jan. 3, 1903; [4]*Neurol. Centr.* No. 1, 1903; [5]*Monats. f. Psych. und Neurol.* 1902; [6]*Neurol. Centr.* No. 1, 1903; [7]*Rev. Neurol.* Mar. 30, 1903; [8]*Path. Soc. of London*, p. 384, 1900; [9]*Münch. Med. Woch.* p. 3125, 1903.

**TACHYCARDIA.** *Prof. A. H. Carter, M.D., F.R.C.P.*

Singer[1] considers that one should hesitate to regard paroxysmal tachycardia as merely a functional disorder of the heart, even though there may be no signs of organic disease observed, and quotes a case

which came under his notice, where, after gonorrhœal rheumatism, a patient exhibited attacks of paroxysmal tachycardia. He appeared to be perfectly well in the interval. Two years later, however, he developed a faint ante-diastolic murmur, which afterwards became more pronounced, and accompanied with anginal attacks. He attributed the heart trouble to a slowly progressive gonorrhœal myocarditis.

REFERENCE.—[1]*Treatment*, May, 1903.

**TAPEWORM.** *Robt. Hutchison, M.D.*

Gerhard[1] recommends a combination of **Pelletierine** and **Male Fern**, as the most "elegant" and efficient vermifuge. There is no necessity for the patient to make several days' preparation. The loss of one meal—a breakfast—is all that is required. In many cases, the most convenient day to select for giving the medicine is Sunday, for the reason that most patients are at leisure at that time.

Instruct the patient to clear out the bowels the day previous with one or two large doses of castor oil or salts: one dose may be given in the morning and one at night, an hour or two after a light supper. The next morning, as early as possible, say at six o'clock, give at one dose **Pelletierine Tannate**, gr. xx in two capsules. In about two or three hours begin with the following:

℞ Oleoresinæ aspidii ʒij | Hydrargyri chloridi mitis gr. xij
Ætheris fʒij |

M et div. in capsulæ, No. xvj. S: Two every ten minutes.

Of course it is understood that no food is taken during this time. In about two or three hours the worm will be expelled whole, with its head fastened to its neck. Recently, in seven cases, the author has found this method to give successful results without any recurrence. It is generally difficult to find the head on account of its small size, and one cannot give assurance that there will not be a return of the parasite unless the head is found, or after the lapse of six or eight weeks, when no segments are found in the stools. Instruct the patient to pass all motions into a vessel of water on the morning the medicine is taken. In this way the worm can be secured when passed, and saved for examination. No traction on the worm should be permitted, for fear of tearing the head off, and losing it. The patient can then rest, and if there is any depression, light food may be allowed. This depression is slight, and in the author's experience has never lasted more than two hours.

It has been pointed out[2] that the dose of pelletierine here recommended is about twice the ordinary maximum dose, and that no oil should be used after giving the aspidium.

REFERENCES.—[1]*Med. News*, Nov. 14, 1903; [2]*Ther. Gaz.* Feb. 15, 1904.

## TENDON TRANSPLANTATION.

*Robt. Jones, F.R.C.S.*
*A. H. Tubby, M.S., F.R.C.S.*

The papers on neuroplasty by A. A. and H. A. Ballance, Purves Stewart, Hans Spitizy, Kennedy, Harris, Low, Young, and others open up great possibilities in the treatment of paralyses. The work done, however, is too limited and the time too short to enable us to draw any conclusions as to its probable place in surgery. With tenoplasty it is different, for it is now an indispensable aid in the surgery of paralyses, and is occupying the attention of surgeons in all countries.

By tendon transplantation is meant the reinforcement of a paralysed muscle, by attaching to its tendon either a part or the whole of the tendon of a healthy muscle. The ways and means of attachment are various, and many modifications of the original operation have been introduced. These will be set out in detail presently. The operation is also known under several other names, such as **Muscle-grafting, Tendon-grafting,** transference of muscle power, **Tendon-implantation.**

The operation is particularly adapted for paralytic deformities arising from the following causes : (*a*) Those due to infantile paralysis, or anterior poliomyelitis ; (*b*) Those due to infantile spastic paralysis, infantile hemiplegia, and cerebral diplegia ; (*c*) Those following injuries of nerves, such as the Erb-Duchenne type of palsy, affecting the upper root of the brachial plexus ; (*d*) Those arising from crushing or severance of nerve trunks.

The operation originated in 1882 with Nicoladoni, who, in a case of paralytic talipes calcaneus, attached the peronei to the tendo Achillis with a good result. In 1892 Parish and Drobnik applied the same method to other forms of club-foot. In 1894 Winkelmann grafted a strip of the tendo Achillis on to the peronei, and he was the first to publish and analyse a series of cases, 16 in all. Since then, Goldthwaite[1] and other American orthopædic surgeons have done good work on the subject. Townsend has written on the subject of tendon transplantation in the treatment of deformities of the hand[2], and given a full bibliography up to 1900. That excellent orthopædic surgeon, E. H. Bradford, of Boston, deals with tendon and muscle transference and arthrodesis for infantile paralysis[3]. F. S. Eve has recorded 4 cases on which he has operated, and we have performed 274 of these operations, some of which are recorded[4]. Sinclair, White, and Montgomery have also reported cases.

Mainzer writes on the subject of indirect transplantation. Instead of joining the proximal end of the active to the peripheral end of the paralysed tendon, when the ends are at a considerable distance apart, he transfers the proximal end of the sound muscle to a neighbouring tendon, then divides the latter below the site of junction, and transfers the conjoined parts to the distal end of that tendon which he wishes to reinforce.

Lange reports 56 cases of tendon transplantation in which he has

prolonged the reinforcing tendons to any required length by **Silk Cords.** He has employed this method in a case of paralysis of the quadriceps femoris. Previous attempts to correct have been made by suturing the sartorius to the quadriceps tendon, but he preferred to bring forward the semitendinosus and biceps under the skin, after freeing them from their insertions. The combined ends are then situated so far above the patella that it is impossible to suture them directly to the tibia. A serviceable silk tendon is produced, however, by the passage of a number of strong silk threads through the tendinous ends of the transplanted muscles above, and the periosteum of the tubercle of the tibia below, giving eventually excellent power of extension. Lange originally employed silk tendons only when the shortness of the muscles rendered them necessary; he now uses them also in cases in which the tendon to be transplanted appears thin, and liable to necrosis if subjected to much tension. In the whole of his 56 cases, healing by first intention was obtained. In only two was the result unsatisfactory, the others, according to him, proved the following points: "Even long strands of silk may be left as substitutes for tendons without the production of suppuration. Several of the artificial tendons were 8 inches long. The functional results were excellent. Patients in whom the semitendinosus and biceps were made to replace the quadriceps femoris, often obtained almost normal powers of extension. The silken tendons are very durable. When the splint is removed from the limb, two or three months after the operation, the artificial tendon is of its original thickness. When, however, the transplanted muscles begin to act, and render the silk constantly taut, the cord steadily increases. Thus, in one case, six months after the operation, the artificial tendon was $\frac{1}{4}$ of an inch in diameter. In another, twelve months after the operation, the thickness of the artificial tendon was $\frac{3}{8}$ths of an inch; and in a third case, two years after the operation, the tendon was of the thickness of the little finger. It is probable that the increase in size is due to the formation of fibrous tissue round the silk. In the case of a girl, in whom a silk tendon, made two and a half years before for paralysis of the quadriceps muscle, proved too long, an incision was made below the patella in order to shorten the tendon. It was easily found in the subcutaneous connective tissue, and was surrounded by a loose and movable layer of connective tissue. There was no true tendon sheath. The tendon had the appearance of a bluish-white, tough, fibrous cord, of the size of a large lead pencil. Below, it was continuous with the periosteum over the tibia. The condensed surrounding tissue was 2 to 3 mm. in thickness, and enclosed the silk cords, which appeared to be as sound as ever. Microscopic examination of an excised piece of condensed tissue around the sheath showed that in the deeper, and therefore older, layers next the silk, the structure was identical with that of a normal tendon. In the superficial layers the structure

was also tendinous, but with the addition of scattered vessels and fat cells. The silk employed is that known as No. 12, and before use it is boiled for ten minutes in a 1–1000 solution of perchloride of mercury."

Lange also claims that silken cords are less liable to form adhesions than divided and transplanted tendons. Jochner had succeeded, previously to Lange's operations, in bridging a gap of 2½ inches in the extensor communis digitorum by using silk.

The rationale of the operation of tendon transplantation is, firstly, to utilize what is undirected voluntary movement; and, secondly, to restore the balance of power so far as possible in the affected part. But it is evident that the joint can never be a fully strong one, since the amount of power at the disposal of the surgeon has been diminished by disease. Yet it must be conceded that a well-balanced joint is better than an ill-balanced and weak one. And, further, one of the greatest benefits of all is that much of the necessity of resorting to the instrument-maker has disappeared. There are, of course, anatomical and surgical limitations to the transference of tendons from one side of a joint to another, although most of the difficulties can be overcome by the indirect method alluded to above, or by the use of silk to elongate the tendon when carried into a new position. It also requires care to regulate to a nicety the amount of power transferred, and occasionally it happens that some time after the operation, an apparently functionless muscle, when it is no longer unduly stretched by over-action of its opponents, will partially recover and disturb the balance which has been obtained.

### Various Methods of Tendon Transplantation.

These are very numerous, and are being constantly added to by the ingenuity of surgeons, but they are readily understood by reference to the accompanying diagrams (*Fig.* 40), which show the scheme of tendon transplantation according to Vulpius. The following methods are there recognized:—

1. Both the weak and the reinforcing tendons are completely divided, and the proximal end of the reinforcing tendon is united to the distal end of the weak.

2. The reinforcing tendon is totally divided, and a slip is partially detached from the distal end of the paralytic tendon, the proximal end of the reinforcing tendon being united to it.

3. Both tendons are divided, and the proximal end of the reinforcing tendon is united to the distal end of the paralytic tendon, and the proximal end of the paralytic tendon to the distal end of the reinforcing tendon, thus effecting a double transfer, crosswise. This method is very useful in cases where a muscle is not entirely paralysed, and it is not desired, while reinforcing it, to entirely throw out of gear the remaining healthy fibres in the weakened muscle.

4. The paralysed tendon is left undivided. The reinforcing tendon is completely severed, and its proximal end is grafted into the paralytic tendon, the distal end of the reinforcing tendon being left free.

5. The paralytic tendon is divided, and its distal end pulled on tightly and inserted into the reinforcing tendon.

6. A slip is partially detached from the reinforcing tendon; the paralytic tendon is completely divided, and the reinforcing slip is joined to the distal part of the paralytic tendon.

7. A slip is partially detached from the paralytic tendon and inserted into the reinforcing tendon.

8. Slips are partially detached from both tendons and are sutured.

9. A slip is partially detached from the reinforcing tendon and inserted into the paralytic tendon.

Of these the most useful are No. 4, No. 6, and No. 9. To these methods should be added :—

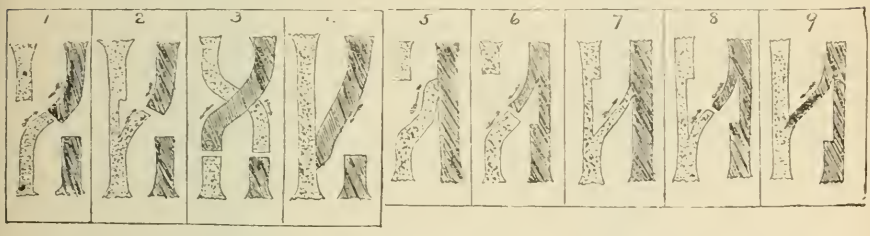


*Fig.* 40.—Scheme (after Vulpius) to show nine methods of tendon-grafting. The paralysed tendon is in light shading, the reinforcing tendon in dark shading.

10. The indirect method, where a comparatively useless tendon is employed to bridge over the gap between the reinforcing and the paralytic tendon.

11. The method of periosteal implantation, which promises to be of great value in certain conditions. These conditions are recognized readily at the operation. The tendon of an extensively paralysed muscle is often very lax, and when pulled upon, stretches unduly, so that even after being reinforced, it will become slack, and place at naught the power of the reinforcing muscle and tendon. Very paralytic tendons are recognized by their thinness, and dull opaque colour, as if they had become fatty, and by their readiness to stretch. When such are found, periosteal implantation of the reinforcing tendon is indicated.

12. The method of making artificial tendons and prolonging the reinforcing tendon as practised by Lange (*See* p. 565).

13. In some cases it is impossible to make a separate muscle and tendon, as, for example, in the case of the gastrocnemius. If a long incision be made at the back of the leg, as far up as the junction of the two heads of that muscle, the muscle can be split longitudinally,

and a portion of the tendon of the split muscle re-attached in another spot, so forming a new muscle and tendon, which can be used to correct either valgus or varus (*Figs.* 46, 47, 48).

*Paralytic Talipes Calcaneus* can be treated by transferring one of the peronei (*Fig.* 41) on the outer side, and part or the whole of the flexor longus digitorum into the tendo Achillis (*Fig.* 42), or, better still, to the periosteum of the os calcis. Opportunity may be taken at the same time to shorten the tendo Achillis and remove a wedge from the astragalus.

*Paralytic Talipes Calcaneo-valgus* can be successfully treated by an insertion of the peroneus longus into the inner side of the tendo Achillis (*Fig.* 41), and in most instances arthrodesis of the ankle may advantageously be combined.

*Fig.* 41.

*Fig.* 42.

*Fig.* 41.—Tendon-grafting for relief of paralytic talipes calcaneus by insertion of peroneus longus *a*, into the tendo Achillis *b*. At *c* is seen the distal end of the peroneus longus.

*Fig.* 42.—Operation for the relief of paralytic talipes calcaneus. The flexor longus digitorum *a*, is inserted into the tendo Achillis. At *b* is seen the distal part of the flexor longus digitorum.

*Talipes Calcaneo-varus* may be treated by inserting the flexor longus digitorum into the outer side of the tendo Achillis, and uniting the distal part of the cut flexor longus digitorum with the pollicis (*Fig.* 45).

*Talipes Equino-valgus* is treated by splitting from below upwards the tendo Achillis, and the gastrocnemius as far as the junction of the two heads of the latter, and then inserting the inner portion of muscle and tendon either into the tibialis posticus, or, better still, bringing it well forwards and fixing it to the under aspect of the scaphoid bone. This relieves the valgus portion of the deformity. The equinus portion is readily rectified by section of the remaining part of the tendo Achillis (*Figs.* 46, 47, 48).

*Talipes Valgus* is treated by transplanting the proximal part of the

*Fig.* 43.

*Fig.* 44.

*Fig.* 45.

*Fig.* 43.—Showing a condition of paralytic talipes calcaneo-valgus before treatment in a girl, aged eight years. The foot and leg are hanging over the edge of a table.

*Fig.* 44.—Same foot nine months after the operation of grafting the peroneus longus and flexor longus pollicis into the tendo Achillis. The shape of the foot is good, and it will be noted that the heel can be lifted well off the ground.

*Fig.* 45.—Tendon transplantation for the relief of paralytic talipes calcaneus-varus. At *a*, the proximal part of the flexor longus digitorum is grafted into the tendo Achillis; at *b*, the distal part of the flexor longus digitorum is united with the flexor longus pollicis tendon.

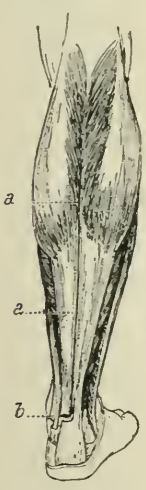


*Fig.* 46.

*Fig.* 47.

*Fig.* 48.

*Fig.* 46.—Operation for the relief of the paralytic talipes equino-valgus. Splitting off at *a*, *a*, of the inner part of the gastrocnemius and tendo Achillis, and section at *b*, of inner half of the latter.

*Fig.* 47.—The second stage of the operation. The inner half of the gastrocnemius and tendo Achillis *a* is brought forward and united, either to the tibialis posticus *b*, or to the periosteum of the scaphoid.

*Fig.* 48.—Final stage of the operation for the relief of paralytic talipes equino-valgus. The outer half of the tendo Achillis is divided at *a* to relieve the equinus.

peroneus brevis into the tibialis anticus above the ankle-joint (*Fig.* 50) and, if necessary, tenotomizing or exsecting a portion of the peroneus longus. We have found it necessary to remove a wedge from the outer side of the astragalus, the base of the wedge being upwards; or the wedge may be removed horizontally, its base being inwards. And we were led to do this by observing that, owing to the alteration of the shape of the joint surfaces, and their adaptation by long use to the valgoid position, there was a strong tendency, despite the muscle grafting, for the foot to return to its old and bad position. A moment's

*Fig.* 49.

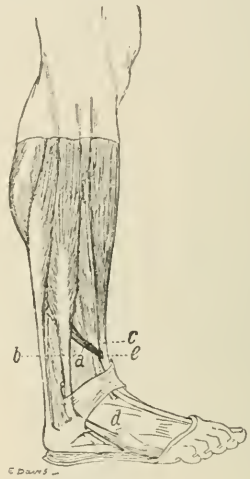


*Fig.* 50.

*Fig.* 51.

*Fig.* 49.—Replacement by tendon-grafting of the paralysed tibialis anticus, *a*, by the extensor proprius pollicis, *b*. The reinforcing tendon is shaded darkly. At *c*, is the extensor communis digitorum.

*Fig.* 50.—Tendon transplantation for the relief of the paralytic talipes valgus. The peroneus brevis *a*, is divided and inserted into the tibialis anticus, *c*, at *e*. At *d*, is seen the distal end of the peroneus brevis, and *b* marks the peroneus longus.

*Fig.* 51.—Transference of the outer tendon of the extensor communis digitorum, and the tendon of the peroneus tertius into the inner border of the foot, for paralytic talipes valgus. The insertion *a*, of the transferred tendons, is shown rather too far forward on the inner side of the foot.

reflection convinced us that these two factors at work, *viz.*, paralysed muscles and altered joint surfaces, must be attacked simultaneously. In slighter cases it is sufficient to graft the outer tendons of the extensor communis digitorum into the tibialis anticus, or into the periosteum on the inner side of the foot (*Fig.* 51).

*Talipes Varus* may be treated by transplanting the tibialis anticus or extensor proprius pollicis into the peroneus brevis above the ankle, and the removal of a wedge from the outer side of the articular surface of the astragalus, the base of the wedge being downwards; or the wedge may be removed horizontally, the base being outwards.

*Talipes Equino-varus.*—This form of paralytic club-foot gives great scope to the ingenuity of the surgeon. We have followed the plan of

splitting tendo Achillis throughout its entire length, and the gastrocnemius as well, so making a new muscle. Then, by dividing the peroneus longus and brevis, and attaching to their distal ends the outer half of the tendo Achillis with the corresponding half of the gastrocnemius, we have succeeded in replacing the paralysed bellies of peronei by the healthy outer half of the gastrocnemius.

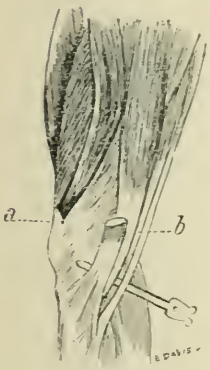


*Fig.* 52.

*Fig.* 53.

*Fig.* 54.

*Fig.* 52.—Lateral view of the inner hamstrings to show transplantation of the sartorius into the patella at *a*. The distal part of the divided sartorius is seen at *b*.

*Fig.* 53.—Transference of the proximal part of the sartorius into the patella to reinforce the extensor quadriceps. At *a*, is the distal part of the sartorius; at *b* is its proximal end.

*Fig.* 54.—Operation of muscle-transference for the relief of paralysed extensor cruris, by reinforcement of paralysed muscle from the inner and outer hamstrings. At *a*, a slip is brought forward from the biceps, at *b* the proximal part of the sartorius is brought forward and the muscular slips *a*, and *b*, are inserted into the patella at *e*. At *d* is seen the distal part of the biceps, and at *c* is the distal part of the sartorius.

We have dealt fully with the treatment of talipes by tendon-grafting, but it finds a much wider use. It not infrequently happens that the extensor cruris is paralysed, while the sartorius, or the hamstrings, or the adductors escape. We have divided the sartorius just above its insertion and transferred it to the top of the patella on two occasions, with the result of enabling the patient to maintain the knee rigid in standing, and to advance the foot in walking (*Figs.* 52 and 53). In other cases where the sartorius is defective, we have brought a portion of the biceps from the outer side of the joint into the top of the patella, with great success (*Fig.* 54).

*Paralytic conditions of the Hand and Arm* lend themselves well to tendon transplantation, and much good may be effected by grafting the flexor carpi radialis and ulnaris to the dorsal surface of the carpus.

Preliminary Points in Tendon Transplantation.—Before it is decided to perform the operation, the case must be carefully studied and a definite plan of procedure formulated. The electrical reactions of the muscles should be previously ascertained, and an attempt made to estimate the strength of those which it is intended to transplant. In the case of the foot, all secondary conditions—such, for instance, as contraction of the plantar fascia, giving rise to pes cavus—should be remedied. For mechanical reasons, it is advisable to select the reinforcing tendon from a muscle whose line of action is as nearly as possible parallel with that of the muscle to be reinforced. For instance, in a case of paralytic valgus it may be better to graft a strip from the tendo Achillis to the tibialis posticus, rather than to bring the tendon from the peroneus longus across the front of the ankle and insert it into the tibialis anticus. It is also important to remember that muscles, which before the operation appear to be hopelessly paralysed, exhibit, after the operation, signs of returning strength. The operation is rarely called for when one muscle only is paralysed, nor should it be done when nearly all the muscles round the joint are implicated. The latter cases are suitable only for **Arthrodesis,** and, indeed, there is a fear that an indiscriminate use of this method of transplantation may lead to unsatisfactory results in some cases, and so bring the operation to undeserved discredit. A great point is the careful choice of cases.

In selecting a healthy muscle for reinforcing a paralysed one, it is advisable that the one selected should belong to the same group, if possible, as the paralysed one, the reason being that it is nearest, and restoration of voluntary function is more quickly and perfectly secured. Then, too, the reinforcing tendon should be carried as directly as possible to the paralysed muscle, and not bent round at an angle, a manœuvre which has the effect of considerably lessening the transfer of power. For instance, if the peroneus brevis were used to reinforce the extensor communis digitorum, the former should be attached to the latter above the ankle, and not below and in front of the external malleolus. When an opponent of a paralysed muscle is selected, it gives emphasis to this principle, namely, that by selecting one of the opponents of a paralysed muscle, we not only reinforce that weak muscle, but we lessen the antagonism which exists between the two groups. And by transferring, for example, the insertion of the peroneus longus in a case of paralytic talipes valgus from the outer to the inner border of the foot, we effect an equality between the forces acting upon the two borders. The success of the operation depends upon healing by primary union.

Technique.—After the limb has been rendered completely aseptic,

and, if obscuring hæmorrhage be feared, an Esmarch bandage has been applied, a suitable incision is made, of such a length and in such a position as to give free access to the tendons to be operated upon. In many cases a single incision will suffice, but it sometimes happens that, to avoid a single large incision, two smaller ones are made, as, for instance, when the peroneus longus is transferred to the inner border of the foot. In this case one incision is made over the front of the fibula, and a second over the scaphoid bone. By burrowing through the subcutaneous tissues of the dorsum of the foot with a director, a channel is made for the passage of the peroneus longus tendon to the scaphoid. It is curious to remark that no adhesions of the tendon, transplanted under these circumstances, to the subcutaneous tissue takes place, doubtless owing to the endothelium on its surface; whence we learn the necessity of very carefully handling the tendons.

If difficulty exist in ascertaining whether the muscle is paralysed or not, the following description of the appearances may be of some assistance. The healthy muscle is always deep red, firm, and elastic. The paralysed muscle is reddish-yellow, and often shows signs of fatty degeneration, and is lax. And it is well to have at hand the constant current battery, with electrodes capable of sterilization, and to stimulate the various muscles as they are laid bare.

It will be better to illustrate the operative procedure by a simple example, such, for instance, as the implantation of the peroneus longus into the tendo Achillis. The two tendons are exposed by an incision of about 4 inches in length made above the external malleolus and between them. Their sheaths being quickly and deftly opened, a longitudinal aperture is made through the tendo Achillis at its thickest part. The peroneus longus tendon is then severed just above the external malleolus, taking care that there is sufficient length to be passed through the tendo Achillis, and to allow the end of the reinforcing tendon to be pleated down on to the tendo Achillis (*see Fig.* 41); or lateral attachment may be effected by suture. The latter plan is not so satisfactory. The foot should now be placed in the position which it is desired subsequently to obtain—that is, somewhat in equinus. A silk ligature having been threaded through the proximal end of the peroneus longus tendon, it is drawn through the Achillis from the front to the back, and then pleated down on the posterior aspect.

A very important question arises as to the *tension* of the reinforcing tendon at the time of stitching. Over-extension is to be avoided, because experience has shown that the muscle loses its contractile power subsequently. We are accustomed to pull upon the proximal end of the tendon to ascertain the elasticity of the muscle. The tension of the reinforcing muscle and tendon should be gauged thus: It should be pulled upon so far and for so long as it shows signs of

complete resiliency, and no further; at least such is our experience. In effect, "stretch well and stitch well."

As to the material for stitching one tendon into another, some have used catgut and others kangaroo-tendon. We have preferred strands of fine Chinese silk prepared as follows: The silk is boiled for half an hour, and is then placed for a week in a solution of 1–1000 potassio-mercuric iodide in spirit. The Esmarch bandage is now taken off, all hæmorrhage arrested, and the wound closed.

After-treatment.—The foot or limb is fixed in the fully-corrected position, and therefore in such a way that there is no tension whatever on the reinforcing muscle. It is left thus for six weeks, to ensure good union of tendon. It is curious to note, that in many cases the muscles, the tendons of which have been used for transplantation, show the reaction of degeneration immediately after the operation, and the normal reaction does not return for six to eight weeks. It may appear that in some cases, immediately on removing the splint or plaster of Paris, over-correction has been made, and the reinforcing tendon is so tight as to seem to demand tenotomy. If it has not been over-stretched at the time of operation, no interference is called for, as with free movements of the part, the muscle readily adapts itself to the length required.

And this leads on to the question, Can all retentive apparatus be dispensed with at once? It is better not to do so, because there is a strong tendency for the reinforcing muscle to become over-stretched and weak on account of the extra work it has to do. It is, therefore, well to employ a light retentive apparatus to assist in keeping the part in its new position. But at the same time the ordinary physiological measures should not be neglected. Daily massage of the reinforcing muscle or muscles should be assiduously practised, and the application of the interrupted current appears to be of value. When it is evident that the muscle is undergoing hypertrophy, then the supporting apparatus should be dispensed with; and it is remarkable how exceedingly great is the overgrowth of such transplanted muscles when properly tended and coaxed for several months after the operation.

Vulpius has drawn attention to the value of tenoplasty as applied to conditions other than paralyses. We all know that contractions of the knee are apt to follow resections, arthrodesis, and rheumatoid contractions. Hofmeister and Codwilla have transplanted the flexor tendons from back to front in order to prevent flexion deformity. Vulpius and the authors have transplanted a part of the tibialis anticus into the extensor digitorum in congenital club-foot. In certain forms of flat-foot we have transferred the peroneus longus to the inner side of the foot. A slipping patella has been fixed by attaching the semitendinosus to its inner border. In hallux valgus the extensor tendon has been transplanted to the inner side of the big toe.

From this survey it will be seen how wide may be the application of tenoplasty, and what gratifying results may be attained.

That such disturbance of the normal connections of insertions of muscle with brain can be compensated in the central nervous system, is shown by experiments made by Kennedy, of Glasgow. The median, ulnar, and musculo-cutaneous nerves were divided above the elbow in dogs, and the musculo-spiral was divided at the same point. The central end of the musculo-spiral was then attached to the peripheral ends of the three nerves which supplied the flexor muscles, and *vice versa*. The result was that the animals in which these cross-sutures were made regained co-ordination of movement completely. In these animals, after the co-ordinated function had been restored, the condition of the cerebral cortical areas, associated respectively with flexion and extension of the paw, were examined by cortical stimulation, and it was found that the *relative positions of the two areas had become reversed.*

These facts supply the experimental proofs of the value and utility of nerve, muscle, and tendon grafting from a neurological point of view.

REFERENCES.—[1]*Trans. Amer. Orth. Assoc.* vol. viii. p. 20; [2]*Ibid,* vol. xiii.; [3]*Ibid,* vol. xiv. p. 223; [4]*Brit. Med. Jour.* 1899 and 1901; *Trans. Soc. for Study of Dis. in Chil.* 1902; [5]*Med. Chir. Trans.* p. 294, vol. 85.

**TESTICLE and SCROTUM.** *Priestley Leech, M.D., F.R.C.S.*

*The Imperfectly-descended Testis.*—Edred M'Corner[1], in a lecture on this subject, thinks that the imperfectly-descended testis rarely, or practically never, produces spermatozoa, though there is a possibility of this occurring about the age of twenty and lasting a year or so; on the other hand, it is endowed with various capabilities with regard to assisting the development and perfection of other sexual features. If both testes are undescended, the outlook is bad; if one only is undescended, there need be no alarm for the perpetuation of the species and the assumption of manly grace. His conclusions as regards operations are as follows:—

1. Orchidopexy is only applicable in mild cases of imperfectly-descended testis, and perhaps even then it is not often called for.

2. Orchidectomy is only justifiable under special pathological conditions, *e.g.*, torsion, severe neuralgia, and in older cases, *i.e.*, after the occurrence of puberty, and a possible and problematical period of testicular activity and spermatogenesis has passed, say from twenty-three upwards.

3. Replacement in the abdomen is indicated in far the majority of cases, and should be always done before puberty, and perhaps up to the age of twenty or thereabouts. The earlier it is done, the better should be the result.

4. No operation may be called for in mild cases, when the testes are close to the bottom of the scrotum or are abdominally retained.

5. Operative interference is demanded in most cases on account

of the secondary changes (of an inflammatory and sclerotic nature) in the testis, which the position of imperfect descent leads to. There is also frequent co-existence of a hernia, and in cases where it does not often, or has never previously, come down, the narrow opening or neck of the sac may cause one of the most dangerous varieties of strangulation.

*Acquired* imperfectly-descended testis is almost always the result of an operation for the radical cure of a hernia, previously to which the testis was at the bottom of the scrotum. This condition may be brought about in three ways : (*a*) The testis was originally imperfectly descended, but owing to the propulsion of a hernia behind it, has assumed a lower position and appears to be fully descended. When the hernia is cured, the testis tends to re-assume its original position. (*b*) If the hernia sac is not sufficiently freed from the cord, and after ligature the sac has been reduced into the abdomen, it will pull the testis into a higher position. (*c*) In bandaging up a case after an operation, the organ may become adherent to the scar of the operation.

*Fibromata of Tunica Vaginalis.*—A case of this condition was reported by Dr. A. Balloch[2], of Washington. In this case the growth in the scrotum reached nearly to the knees ; the tissues of the scrotum had a flabby, gelatinous feel, and three separate masses were felt in the right side of the scrotum. No glands could be felt. The whole mass was removed along with the testicle ; the total weight was 58 ounces, the three tumours alone weighing 38 ounces. His conclusions are : That like other serous cavities, the cavity of the tunica vaginalis may be the seat of fibrous growths, and irritation is an important factor in their production ; they originally spring from the sub-serous connective tissue, but may become detached and lie loose in the cavity ; they are mostly of the variety known as soft fibroma, and are prone to myxomatous and fatty degenerations. The testicle may be affected by the same forms of degeneration ; the growths are generally small. Excision is the only effectual remedy ; and as the testicle is liable to be affected, the propriety of removing it with the growths should be considered.

References.—[1]*Brit. Med. Jour.* June 4, 1904 ; [2]*Ann. Surg.* Mar. 1904.

**TETANUS.** *Purves Stewart, M.A., M.D.*

Further experience of the treatment of tetanus by means of **Antitoxin,** strengthens the favourable opinions already formed of the serum treatment of the disease. Behring[1] has collected statistics which illustrate the remarkable reduction in the mortality of cases where tetanus antitoxin has been administered. Prior to the introduction of this treatment, out of 716 recorded cases the mortality was 631, or 88 per cent ; whilst in cases treated by antitoxin Behring finds that the mortality now amounts to between 40 and 45 per cent. Early administration is of the greatest importance for successful

treatment. Where the administration of antitoxin is delayed, the danger increases hour by hour. Other important factors are age, individual susceptibility, the virulence and amount of the infective virus, the site of inoculation, and the accessory pathogenic elements in the lesions which predispose to the spread of the infection. Differences of age and of general nutrition, for example, modify the degree of pathogenic activity of the toxin. The longer the period of incubation the better the prognosis.

In view of the remarkable frequency of tetanus after gunpowder wounds (especially in boys with fireworks and toy pistols), Lewis Taylor[2] proposed, in addition to the usual free incision, curetting, and disinfection by pure carbolic acid of the original wound (under a general anæsthetic), to give a *prophylactic* hypodermic injection of tetanus antitoxin. He treated 72 patients in this way, and in none of them did tetanus supervene, whilst of 57 patients who did not receive prophylactic antitoxin treatment, one case developed tetanus, which proved fatal. Eisendrath[3] also advocates similar prophylactic measures.

Ordinarily, however, the physician is only called to see the patient after the symptoms of tetanus have already supervened. In such cases, antitoxin should at once be administered. It may be injected hypodermically, as in several successful cases by Annand[4], Murphy[5], and others, in doses of 10 cc. or upwards. Sometimes, as in Annand's case, multiple arthritis and various skin eruptions may follow (a week or so after the administration), but these symptoms, analogous to antitoxin rashes in diphtheria, are transient and of no grave significance. Still better is the injection of the antitoxin into the spinal subarachnoid space, by means of a lumbar puncture needle, as in four cases recorded by Wallace and Sargent[6], three of which recovered. This intrathecal injection should be performed under chloroform anæsthesia, a corresponding quantity of cerebrospinal fluid being first withdrawn, the needle remaining *in situ* whilst the barrel of the syringe is recharged with the serum. Intracranial injection of the antitoxin through a hole drilled in the skull, presents no advantages over intra-spinal administration. Moreover, the lumbar injection can be readily repeated on successive days if necessary, and involves no risk of injury to the central nervous organ. Rogers[7] had a successful case where the antitoxin was injected into the nerve trunks of the affected limb, but this seems an unnecessarily complicated operation. Full doses of **Chloral** and **Bromide** are useful adjuncts to the serum treatment, though by themselves they are of but little avail.

Another method, by means of which excellent results have been claimed, is that of Baccelli, which consists in the repeated hypodermic administration of a 5 per cent aqueous solution of **Carbolic Acid.** It should therefore be borne in mind, not only on occasions where antitoxin is not obtainable, but also as a useful supplement to the antitoxin treatment. Symmers[8] gives a review of 75 cases thus

treated, with a total mortality of only 23 per cent. The carbolic acid may also be administered by mouth or per rectum, and should be pushed to its utmost physiological limits. In Echardt's[9] patient, a child weighing only 42 lbs., no fewer than 142 injections of a 3 per cent solution were administered within thirty-eight days, the total amount of carbolic acid being 4·17 grammes. Symptoms of carbolic acid poisoning supervened in the early days of treatment, but in spite of this the injections were persevered with, and the toxic phenomena disappeared.

References.—[1]*Beitr. Exp. Ther.* Hft 7, p. 1, 1904; [2]*New York Med. Jour.* June 27, 1903; [3]*Mec. Rec.* May 21, 1904; [4]*Lancet*, April 2, 1904; [5]*Ibid*, March 5, 1904; [6]*Ibid*; [7]*Med. Rec.* May 21, 1904; [8]*Amer. Med.* Aug. 15, 1903; [9]*New York Med. Jour.* Jan. 2, 1904.

**THORAX (Surgery of).** *Priestley Leech, M.D., F.R.C.S.*

Dr. W. B. James[1], of New York, reported four cases of serious injury to the chest-wall from coughing, all in persons of early middle life; one occurred in an attack of measles, two in influenza, and one in whooping cough. In two of the cases there was undoubted fracture of the ribs, and in the other two the same diagnosis was probable, but could not be made certain.

Carl Beck[2] remarks that the histories of cases of old *pyothorax* observed by him in New York during the last twenty-two years, show that thorough evacuation of the pleural effusion was omitted at an early stage, *i.e.*, until after the expansion power of the lungs was materially impaired; in the great majority of these cases aspiration was continued for weeks before radical steps were taken. It is not denied that a cure may be obtained by aspiration in cases of empyema; but it is a hazardous proceeding, and in 55 per cent of Beck's cases solid masses were found in the abscess cavity, and these could certainly not be aspirated. Aspiration should be exclusively reserved for exploratory purposes, for the cure of sero-thorax, and as a preliminary procedure when patients are extremely exhausted; and in such cases the apparatus of Bülau should be used. This method consists in introducing through the intercostal space a large trocar from which the stylet is withdrawn, only the cannula remaining. A rubber drainage tube is then pushed forward through the cannula into the pleural sac, and then the cannula is removed; the tube is connected by a glass cannula with a long rubber tube which ends in a glass vessel filled with bichloride of mercury solution. The tube has been lost in many cases in the pleural cavity, in spite of being fixed with plaster. In all cases of pyothorax **Rib Resection** should be performed.

Tuberculous cases, where the pleura has been infected through the lungs, show a fair percentage of cures. In old cases, Schede's operation is good in principle, but the technique is often too severe. The thickened costal pleura must be removed, but a typical method of resection is only advisable in a small number of cases. Beck

advises exploration of the pus cavity in the first place. He makes an incision and resects the rib which is approximately over the middle of the cavity ; the fistula may be used for the passage of a sound, but in old cases, bony projections are formed around the fistulous tract, which makes it difficult to explore from this point. The pleura under the resected rib is divided and the cavity explored, and enough of the wall of the cavity (ribs and thickened costal pleura) removed to obliterate it. The intercostal arteries may be ligatured *en masse*. Portions of the scapula may need removal in some cases.

To reach cavities at the apex of the lung, he makes an incision (with the arm at right angles) along the lower border of the pectoralis major muscle, horizontally to the lower part of the anterior margin of the deltoid muscle ; the muscles are dissected back and pulled upwards along with the vessels. If it is very difficult to reach the first rib by means of the pectoro-axillary incision, then resect the clavicle temporarily. Callous areas of the pulmonary pleura should be removed.

Von Mikulicz[3] speaks of experiments which have been carried out at his instigation in connection with the prevention of pneumo-thorax. The reason why thoracic surgery has not been able to find a place in modern surgery like that of abdominal surgery, is because as soon as the pleura is opened, the lung collapses and is put out of action, and the occurrence of pneumo-thorax is the most frequent cause of failure in suture of the heart. Sauerbruch investigated the subject, and constructed a sort of **Pneumatic Chamber**, which admitted of the free opening of the thorax without any danger of collapse of the lung. The experiments were carried out for the most part on dogs. A negative pressure of 10 mm. was sufficient to cause the lung to protrude somewhat out of the wound. The whole body of the dog except the head was placed in the chamber, the operator and assistant being inside the chamber, the anæsthetist outside ; a two hours' stay in the negative chamber did not inconvenience the operator. Some experiments were also carried out in a chamber having a raised positive pressure, in which the dog's head was kept, but the anæsthetist could not stay in longer than twenty minutes, as he became much affected by the chloroform vapour.

He advises what he calls "intercostal thoracotomy" ; the incision is made exactly midway between two ribs, so that there may be sufficient muscular tissue above and below to admit of secure suture after the end of the operation ; the wound can be enlarged by retracting the ribs ; if the ribs are so rigid that they cannot be pulled asunder, it is better to break them, which has the advantage over sawing them that they are covered with periosteum, and a later suture of the bone is unnecessary.

References.—[1]*Med. Rec.* Dec. 5, 1903 ; [2]*Ann. Surg.* Mar. 1904 ; [3]*Deut. Med. Woch.* April 7 and 14, 1904 ; *Brit. Med. Jour.* July 16, 1904.

**TINEA IMBRICATA.** *J. W. W. Stephens, M.D.*

Basset-Smith[1] has examined the scales from many cases of this skin affection. In its early stages it may resemble tinea circinata, but later the concentric wavy outlines of the affected skin, and the separation of the scales from one border in large flakes, makes the diagnosis easy. He did not succeed in growing the parasite. He found in one specimen an example showing spore formation by gonidiophores. He comes to the conclusion that the fungus is not a trichophyton, but belongs to the aspergillus group of the perisporiaceæ.

REFERENCE.—[1]*Brit. Med. Jour.* Sept. 17, 1904.

**TINNITUS AURIUM.** *Hunter Tod, M.B., F.R.C.S.*

As a last resource to relieve this most distressing affection, attempts have been made to perform **Division of the Auditory Nerve** within the skull. This operation involves the danger of meningitis and injury to the facial nerve, and in addition, the risk that the tinnitus, being perhaps of central origin, may continue even if the operation be successful as a surgical procedure, and the auditory nerve be actually divided. It is therefore not a procedure to be lightly undertaken even by the most experienced operator. There are three methods of operating: (1) By exposing the cerebellum in the usual way *via* the posterior fossa, opening the dura mater, and slowly compressing the cerebellum inwards until the facial and auditory nerve come into view; (2) By operation for exploration of the posterior surface of the petrous portion of the temporal bone. This is an elaboration of the ordinary complete mastoid operation; (3) *Via* the middle fossa.

Cuthbert Wallace and Marriage[1] describe a case where they operated by the second method. The chief difficulty was the bleeding from the surface of the cerebellum. There was no resulting facial paralysis. The patient died twenty-one days after the operation; the cause of death was not definitely ascertained, but it was not due to meningitis. Tinnitus was diminished for several days after the operation, but never disappeared.

Krause[2] relates a similar case where he operated by the first method. The tinnitus is stated to have decreased on the third day, but the patient died from pneumonia on the fourth day.

Parry[3] describes a successful case where the patient recovered, and was greatly relieved, but unfortunately the facial nerve was injured. He operated *via* the middle fossa. He favours this method, as it is the shortest route to the internal auditory meatus, and the parts could be better retracted, so affording a good working field.

REFERENCES.—[1]*Lancet*, April 30, 1904; [2]*Beitr. z. klin. Chir.* vol. xxxvii; [3]*Otol. Soc. Meeting*, May, 21, 1904.

**TONGUE (Diseases of the).** *Priestley Leech, M.D., F.R.C.S.*

*Tuberculosis.*—Dally[1] reports a case of a woman, aged thirty-five, who had two tuberculous ulcers of the tongue. Treatment by lactic acid was first tried; but more improvement, and finally cure, was obtained by the use of **Carbolic** and **Nitric Acids.**

Keyser[2] gives notes on ten cases of *epithelioma* of the tongue in women. The frequency of this disease in women is variously estimated by different authors from 8·09 per cent to 28, 36, and 43 per cent of the total number of cases of epithelioma. As regards the age, in twenty-one cases Keyser has collected, the average age was 54·7 years. J. Hutchinson, junr.[3], refers to a case in a girl nineteen years old, where removal was followed by recurrence.

In regard to *causation*, as in men, the new growth is almost always preceded by prolonged irritation, the result of either rough, carious teeth, a badly-fitting or broken tooth-plate, or syphilis of the tongue ; the pre-cancerous condition, or leucoplakia, is commonly, but not invariably, seen. From his cases he does not think syphilis is such a common precursor of lingual cancer as is generally believed, nor is smoking.

REFERENCES.—[1]*Brit. Med. Jour.* Dec. 5, 1903 ; [2]*Lancet*, Sept. 17, 1904 ; [3]*Pract.* 1903.

**TORTICOLLIS (Spasmodic).** *Purves Stewart, M.A., M.D.*

There is no more obstinate variety of so-called functional nervous disease than spasmodic torticollis. Its treatment is frequently a matter of great difficulty. Of the various agents employed, perhaps the most efficacious have been **Rest** in bed with **Over-feeding, Massage,** and local **Galvanism.** Internally **Bromides, Chloral, Gelsemium, Atropine, Hyoscine,** etc., have been employed, and with varying success. We should always bear in mind that the local muscular spasm is simply the expression of a cortical hyperexcitability, and it is only when the cortex proves unresponsive to sedative treatment that we are justified in surgically attacking the muscles themselves. **Division of the Nerves** (spinal accessory and uppermost cervical nerves) supplying the affected muscles, has frequently relieved the symptom, though it must be recognized that this merely implies the substitution of a peripheral palsy for a spasm of central origin. Moreover, the writer has seen more than one case in which, after operation, the spasm has recurred in adjacent muscles previously unaffected. Potts[1] records a case which had lasted over a year, in which considerable benefit resulted from the intra-muscular injection of **Atropine** ($\frac{1}{200}$ gr. increased gradually to $\frac{1}{15}$ gr.) together with local galvanism. In three weeks the spasm stopped, and the drug was discontinued. It recurred after four months, and was again checked by atropine.

REFERENCE.—[1]*Univ. Penns. Med. Bull.* April, 1903 : *Ther. Gaz.* July 15, 1903.

**TREMATODES IN MAN.** *J. W. W. Stephens, M.D.*

Conyngham[1] describes a new fluke found by Watson, in Nigeria, in the small intestine of a native. The patient suffered from diarrhœa. The stools were numerous and watery, but contained no blood or mucus. The flukes were abundant in the duodenum and jejunum. They are pear-shaped, flattened ventrally, and slightly indented

posteriorly. Anteriorly there is a terminal and ventral sulcus (at the bottom of which lies a sucker). The posterior sucker is large, about 1 mm. across. The genital pore lies about a quarter of the length of the fluke from the anterior end, and is rather prominent. The fluke is 8 mm. long, 5 mm. broad, 2.5 mm. broad at the anterior end, 4 mm. thick. The fluke is supposed to belong to the genus *Amphistomum*, and the name *A. watsoni* is proposed for it. Specimens of this fluke from the same patient have been examined by Shipley and myself: it belongs to the genus *Cladorchis* and not *Amphistomum*, and hence its name will be *Cladorchis Watsoni*. (*See also* NEMATODES.)

REFERENCE.—[1]*Brit. Med. Jour.* Sept. 17, 1904.

**TRYPANOSOMIASIS.** *J. W. W. Stephens, M.D.*

Bruce[1] summarizes our knowledge of human trypanosomiasis and its relation to sleeping sickness in the following eleven propositions, which are, however, not given in Bruce's original words.

1. The trypanosome found in the blood of natives in West Africa, Congo, and Uganda is identical with that found in cases of sleeping sickness. The main proof of this is that apart from morphological identity, the result of animal inoculations of trypanosomes obtained from these different sources is identical. This trypanosome is Dutton's *T. gambiense*. (*See Plate XXX, Figs. A, B, C, D, E.*)

2. Trypanosome fever (trypanosomiasis) is only the first stage of sleeping sickness. The proof of this is based on the fact that natives with trypanosomes in their blood, and showing no signs of sleeping sickness, have, after a lapse of about a year, developed typical and fatal symptoms.

3. There is no immunity to the disease, and Europeans as well as natives suffer. In fact, trypanosomiasis is by no means uncommon among Europeans in the Congo Free State.

4. Once the trypanosome has gained access to the circulation in all probability death will eventually occur from this cause in 100 per cent of cases. The incubation period may last for years.

5. There is no evidence worth serious consideration to show that any of the lower animals take any part in the spread of the disease.

6. Human trypanosomiasis is conveyed from the sick to the healthy by means of a particular tsetse fly, *Glossina palpalis* (*See* TSETSE FLIES). The distribution of this fly and sleeping-sickness in Uganda is identical; where there are no flies of this species there is no sleeping sickness.

7. There is a certain amount of evidence to show that other species of tsetse fly can also transmit the disease, so that if cases are introduced into healthy areas in other parts of Africa, it is possible that the particular species of tsetse fly found there will transmit the disease.

8. The evidence is against the transmission of the disease by other biting flies, such as horse flies of the genus *Tabanus*, or "stable flies,"

PLATE 30.

# HUMAN TRYPANOSOMIASIS.

FIG. A. *T. gambiense* from the blood of a Gambian native.

FIG. B. *T. gambiense* from the blood of a tame rat.

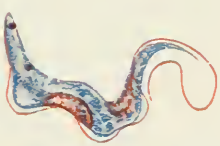

FIG. C. *T. gambiense*. Longitudinal division, showing two nuclei and two blepharoplasts.

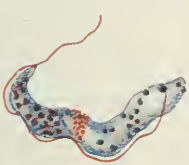

FIG. D. *T. gambiense*. "Stumpy form."

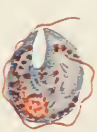

FIG. E. *T. gambiense*. "Round form."

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of the genus *Stomoxys*, for as far as we know, these flies cannot transmit the trypanosome of sleeping sickness (*T. gambiense*), nor indeed the trypanosomes that are found in cattle, horses, etc., though Edington states that he has got positive results with *Stomoxys*, and Theiler with another biting fly, *Hippobosca rufipes*, in the case of *T. theileri*.

9. There is no proof that *T. gambiense* passes through any developmental stage in the tsetse fly, but the transference is a mechanical one. The facts adduced in favour of this statement are: (*a*) The fly does not remain infective for more than forty-eight hours; all attempts to produce infection with the fly on the third day failed; (*b*) If a development occurred, then one would expect the flies not to be infective for some time after they had sucked blood. This is the case in yellow fever, where *Stegomyia fasciata* does not become infective till about twelve days; it also holds good for malaria, where the anophelines do not become infective for about ten days. The possibility of a development in the tsetse fly is, however, not denied.

10. All stages of the development of *T. gambiense* take place in the human host, and a second host is unnecessary for the completion of a life cycle.

11. Preventive measures should include the checking of the movement of natives from an infected area into a healthy area, and the movement of healthy natives into infected areas, the evacuation, where possible, of these areas, the destruction of flies and their breeding places.

*Mal de Caderas.*—Elmassian and Migone[2] record further facts implicating carpinchos (*Hydrochœrus capibara*) in the spread of mal de caderas among domestic animals. These small rodents live in the banks of streams in Paraguay. A hunt was instituted with dogs, for the purpose of capturing the rodents, the skins being sold and the carcases being consumed by the dogs. Those dogs engaged in the hunt became infected (with *T. equiperdum*), and many died. In a second hunt, the dogs devoured the carcases while yet warm, and mal de caderas became epidemic among these, while other dogs not employed, remained healthy. In some way, horses that are kept in pasturages where the carpinchos exist become infected. How this is brought about it is difficult to explain, and further, the difficulty of explaining how the disease is spread from horse to horse is equally difficult, as the evidence is against the implication of any biting fly.

*Cultivation of Trypanosomes.*—Novy and M'Neal[3] have succeeded in obtaining cultures of trypanosomes *in vitro* on a mixture of agar and blood. To ordinary agar cooled to 45° defibrinated aseptic blood is added, and the mixture cooled in flasks, so as to give as large a surface layer with condensation water as possible. The proportion of blood to agar is 2 to 1, though *T. lewisi* will also grow when the proportion is 1 to 2, or even 1 to 10. The best proportion for *T. brucei*, which

is more difficult to grow, is 2 to 1, or 3 to 1. The incubation temperature should be 25° C. As soon as a good growth is obtained, sub-cultures are made. Asepsis is essential for success. The filtrates of cultures of *T. lewisi* that have passed through a Berkefeld filter are still infective. (*See also* SLEEPING SICKNESS).

REFERENCES.—[1]*Brit. Med. Jour.* Aug. 20, 1904, [2]*Ann. de l'Inst. Pasteur*, p. 587, 1904; [3]*Jour. Amer. Med. Assoc.* Nov. 21, 1903.

**TSETSE FLIES.** *J. W. W. Stephens, M.D.*

Austen[1] now recognizes eight species of tsetse-fly, and gives a revised synopsis for their identification. With regard to the distribution and habits of the flies, he adds the following facts.

1. *Glossina palpalis*—Occurs on the shores of Victoria Nyanza and down the Nile until Albert Nyanza is reached, and in the neighbouring districts where the local conditions are suitable, *e.g.*, along the rivers falling into lake Rudolf. It occurs in Sierra Leone and the protectorate, in Northern Nigeria, and abundantly in the Congo Free State. There is no apparent connection with big game, as is the case in other species, but it appears to have some association with wild pigs. The pupa is from 5 to 6 mm. long and about 3 mm. broad. It differs from the pupa of *G. morsitans*, the Zululand tsetse-fly, in the following respects. The "lips" of the last segment are closer together, so that the space between them is only about half that of *G. morsitans*. The lips themselves are larger, and the edge of the lips has only two instead of four furrows. The ridges connecting the bases of the lips are less broad, and their edge is bright, black, and not dull. The notch between the lips is deeper. Austen thinks it possible that all the species may be distinguished in the pupal stage.

2. *G. pallicera.*—Distribution doubtful. Occurs at Assinie, W. Africa.

3. *G. morsitans.*—Occurs in Zululand, Transvaal, Portuguese E. Africa, Rhodesia, British Central Africa, British East Africa, Togoland, Nigeria, Bahr el Gazal.

4. *G. tachinoides.*—Occurs in Northern Nigeria, Lake Chad, and the Shari river.

5. *G. pallidipes.*—Occurs in British Central Africa, British East Africa, and Uganda.

6. *G. longipalpis.*—Distribution uncertain. Occurs in Togo and in the Zambesi region.

7. *G. fusca.*—Occurs in British East Africa, Congo (Leopoldville), Gold Coast, Ivory Coast, Togo, Nigeria, Mashonaland. This species is of interest, in that it has been observed to bite at night.

8. *G. longipennis.*—Occurs in British East Africa, Somaliland. Its native name in Somaliland is "Aino," which is also the name of a form of trypanosomiasis among camels.

REFERENCES.—[1]*Liv. School of Trop. Med.* Mem. xiii; [2]A Monograph of the Tsetse-flies.

**TUBERCULOSIS (Renal and Vesical).** *E. Hurry Fenwick. F.R.C.S.*

Hurry Fenwick[1] read a paper at the Medical Society of London on the "Treatment of Early Urinary Tuberculosis." He advocated the use of Koch's **New Tuberculin** in cases where the mucous membrane of the bladder was alone affected by the disease. He had used this remedy in about 50 cases since its introduction in 1896, and found that in many instances it afforded real relief to the pain in the lower urinary passages. No claim for cure was advanced. He stated emphatically that it should not be used unless the tubercle bacilli were found in the urine by a competent observer. Its exhibition had to be carefully watched, for it occasionally increased the pain in certain forms of vesical ulceration. When this occurred, it was an indication that the patient was being treated too energetically, and the dose should be reduced or the treatment suspended for a while. Moreover the tuberculin appeared, under certain conditions, to light up trouble in one or other kidney if latently affected by tuberculosis. In a large number of cases of urinary tuberculosis, the cystoscope enabled the clinician to decide as to whether the kidney was affected or not, for the chronic form of the disease was almost unilateral, and the kidney was implicated early in the course of the disorder. When the kidney was shown by the cystoscope to have a ureter condensed and choked by peri-ureteritis, he advocated its removal. He gave a list of thirty nephrectomies for tuberculosis, with one death. Four of the female cases in this list became pregnant subsequently to the nephrectomy, and two have been delivered of healthy children. This afforded evidence that a single kidney in a tuberculous patient could bear the stress of pregnancy. He considered that the heavy death-rate of nephrectomy for tubercle of the kidney, just as that for carcinoma of the kidney, depended upon the surgeon not operating early enough, and he contended that the cystoscope would enable earlier interference and more judicious after-treatment. Should the cystoscope show a *single* ulcer in the bladder (and that condition was a rare one) he advised that it should be cut away suprapubically instead of using tuberculin. The same lines were employed in the male affected by genito-urinary tuberculosis. The affected testis or testes, vasa and seminal vesicles, must be sacrificed, if any good was to be effected. Should, however, the deposits be many and widespread, or should the history of tuberculosis of parts other than the genito-urinary tract be obtainable, operation and tuberculin were useless, and the best that could be done consisted in hygienic, dietetic, and therapeutic measures.

Dr. A. E. Wright[2] states that the new tuberculin consisted of the protoplasm of the tubercle bacilli, and that it was a "vaccine" against tuberculosis similar to the "vaccine" against plague, and, as he had more recently demonstrated, the "vaccine" against streptococcic infection. The new tuberculin could be used with success in those cases in which the tubercle was local, and he had used

it in such cases with a fair measure of success. He had inoculated a considerable number of cases suffering from tuberculosis of various types, and from the examination of the blood he had been enabled to construct a curve showing the increase of immunity. He had, however, only treated one case of urinary tuberculosis, but in that case very marked improvement had taken place. He thought that it was only by an examination of the blood that a true estimate of the effect produced by the inoculation could be obtained After the first inoculation a negative phase was produced, which after two or three days became a positive phase. The positive phase gradually fell away, and then it was that a fresh inoculation should take place. Immunity was in this way built up, and he had treated several of the severer forms of tuberculosis in this manner with success.

Motz[3] reports in some detail eight cases of apparently undoubted vesical tuberculosis, which, either with or without treatment, recovered completely, and he states that he has seen many cases greatly bettered. This corroborates Guyon's teaching to the effect that vesical tuberculosis is quite as curable as is this disease when seated in any other portion of the body. Banzet has for many years followed cases of apparent cure, and is convinced that this cure is permanent. Of twenty-nine cases treated by instillations of sublimate, according to Banzet, six were completely cured. Of Motz's eight cases, one was subjected to **Curettement,** and five per cent **Guaiacol Oil;** one was treated by **Sublimate Instillations;** while six patients recovered without local vesical treatment. In five of these cases the bladder recovered permanently on the removal of a higher focus of infection (in four cases by a nephrectomy, in one case probably by a ureteral obliteration), thus showing that tuberculous ulceration of the bladder has a spontaneous tendency toward healing, provided there be no constant reinfection.

As to treatment, Motz believes that even cases of profound infection should not be given up, but that the closest attention should be devoted to the general building up of the health. Moreover, it should be remembered that primary tubercular cystitis is extremely rare, this disease usually being secondary to infection of the kidneys, the prostate, or the seminal vesicle. Tubercular nephritis constitutes an indication for **Nephrectomy,** even in the presence of most pronounced vesical lesions. If the prostate and vesicles are the sources of original infection the prognosis is by no means absolutely bad, since spontaneous cure is quite possible. When softening takes place, drainage should be employed in accordance with general surgical principles, and this is sometimes followed by cure.

REFERENCES.—[1]*Lancet,* April 2, 1904; [2]*Ibid*; [3]*Ann. des Mal. des Genurin.* No. 14, July, 1903; *Ther. Gaz.* Nov. 5, 1903.

**TUBERCULOSIS** (Surgical.) *Priestley Leech, M.D., F.R.C.S.*

The outdoor treatment of surgical cases of tuberculosis was mentioned in last year's *Annual*; this year Deanesly[1] says that the

value of the principles on which the modern open-air treatment of consumption is based is just as great in the treatment of other cases of tuberculosis which come under the surgeon's care ; in many of them (glands, diseases of bones and joints) the natural tendency to cure is greater than in pulmonary tuberculosis. He thinks much better and more rapid results can be obtained when local mechanical treatment is combined with general treatment on sanatorium lines. The value of complete bodily rest in the open air is not sufficiently appreciated. Ambulant treatment, *e.g.*, in hip disease, is better than being in hospital all day, but a much more rapid cure can be obtained by keeping the patient for the first few months absolutely recumbent out of doors ; the same applies to the knee and spine when diseased. Patients, when thus treated, almost invariably enjoy improved appetite and sleep, and increase considerably in weight. Before adopting the open-air method, adenoids and enlarged tonsils, if present, should be removed, thus removing any obstruction to the air passages, which might cause imperfect respiration. He thinks it unwise to spend large sums on hospitals and sanatoria at the seaside or in the country ; the cost would be enormous, and if the conditions of cities become such as to render health impossible (for life in this country will in future be predominantly urban) it is no use building sanatoria. Deanesly has treated such cases with great benefit in cities, in a garden or even in a backyard, keeping the sleeping-room as bare and clean as possible, and the window wide open. He suggests an organized system of district nursing to supervise the home treatment of patients discharged from the general hospitals, and to provide extra foods and necessaries in cases of poverty. Every general hospital should be provided with facilities for treating patients in the open air. The beneficial effects of this simple measure, in cases of chronic burns and suppurating wounds of all kinds, are very great.

Etlinger[2] says, that the basis of the sanatorium treatment of consumption, is placing the patient under ideal hygienic conditions, and that the application of the principles and details of this treatment, specially modified to meet the requirements of individual cases, is the strongest weapon that can be employed in the treatment of every form of surgical affection.

*Healed Tuberculous Bone Lesions* are supposed by many people to be harmless ; but those who have had a large experience of them can recall to mind many examples, which prove that a recrudescence of the disease is by no means infrequent. Painter[3] says that a so-called healed tuberculous bone lesion is a constant menace to its possessor, and proves his contention by a study of 17 cases. In this series of cases, the average interval which elapsed between the end of the treatment of the initial disease and its recrudescence, was twelve and a half years, showing that a time limit for cure is inadmissible. Traumatism is directly associated with the relapse in about 25 per

cent of the cases. The recurrence is most commonly local ; metastases are not common. Indirect trauma is probably the exciting cause of the recurrences, especially where partial ankylosis or deformity exists. Deformity and shortening should be corrected as far and as accurately as possible, to lessen the chance of recrudescence, and patients should be cautioned as to the possibility of this occurring.

*Tuberculous Arthritis.*—K. W. Monsarrat[4] believes that flexion, occurring after erasion and excision of the knee-joint, is more likely to occur when the integrity of the extensor tendon is interfered with, thus giving an undue advantage to the hamstrings and gastrocnemius. Transverse division of the patella, if bony union occurs, avoids this, and Kocher's method of incision of the capsule on each side of, and close to, the patella also avoids it. Monsarrat recommends a long median incision commencing half an inch below the tubercle of the tibia, and ending 3 inches above the upper border of the patella ; all the structures are divided exactly in the middle line, and the patella sawn into two lateral halves. This incision gives access to all portions of the joint. As regards the attempt to get a movable joint after erasion, or where forcible flexion of a joint which has been tuberculous is suggested, the use of **Tuberculin** may guard against the employment of such means in joints where tuberculous disease may be still active. Attention is drawn to the early removal of epiphyseal foci of tubercle in the femoral condyles, and their early removal.

Bartow[5] thinks **Incision and Curetting** of tuberculous foci in the femoral epiphyses should be done much more frequently, in place of prolonged rest. If the joint is not tuberculous, early curetting will give better results than treatment by rest.

*Hip-joint.*—Tubby[6] has a very good article on tubercular disease of this joint. With all surgeons, he thinks most cases of this disease begin in the epiphysis, and it is better, if possible, to attack the disease before it extends to the joint. The time given to the cure of this condition is much too short ; an uncomplicated case in a weakly child requires three years' treatment. The treatment is rendered longer and much less efficient by allowing the patients to walk about too soon. As regards the treatment of abscesses, opening, thorough cleansing, and then sewing it up again are the three points of treatment to be kept in mind. After the abscess cavity has been well scraped out (two or three openings being made if necessary), it is well flushed out by sterilized water, and then well dried with sponges on sticks ; the cavity is then swabbed out with the following solution : Menthol, ℥j ; spirit, ℥j ; glycerin, Oj. All excess of solution is expressed, and the cavity sewn up ; firm pads are applied over the site of the abscess, and the part is immobilized. In ankylosis of the hip-joint he recommends **Adams' Operation** in preference to Gant's infra-trochanteric osteotomy.

*Tuberculosis of Elbow-joint.*—Darmianos[7] published the results

of 77 resections and 29 amputations performed by Mosetig-Moorhof for tuberculosis of the elbow-joint. He recommends resection as being better than conservative treatment. Lung complications, unless grave, are no contra-indication. **Excision** is done by a transverse incision over the back of the elbow-joint. The tuberculous structures are removed, and the joint surface of the bone sawn through until healthy bone is reached; the triceps attachment to the olecranon is preserved. The cavity, cleansed with formalin solution, is filled with a mixture of **Iodoform, Sesame Oil,** and **Fluid Spermaceti.** The remainder of the olecranon, with the triceps, is brought down and fastened to the ulna with silver wire; drainage is arranged superficially. The arm is put up in a starch dressing and carried at an angle of 120 degrees. It is first dressed on the eighth day, and on the tenth day active and passive **Movements, Massage,** and **Electricity,** are begun. The results were much more favourable than those obtained by conservative treatment. (*See also* KNEE-JOINT, EXCISION OF.)

REFERENCES.—[1]*Brit. Med. Jour.* Oct. 17, 1903; [2]*Pract.* April, 1904; [3]*Boston Med. and Surg. Jour.* Jan. 8, 1903; [4]*Lancet,* Nov. 7, 1903; [5]*New York Med. Jour.* Nov. 1904; [6]*Clin. Jour.* June 10, 1903; [7]*Deut. Zeits. f. Chir.* Bd. lxxi. p. 288.

## TYPHOID FEVER.

*E. W. Goodall, M.D.*

PATHOLOGY.—A. S. Grünbaum[1], by giving 1 cc. of a twenty-four hours' old broth culture of *B. typhosus* in milk, succeeded in producing typhoid fever in four chimpanzees. There was fever and diarrhœa. Two of the animals recovered. Two were killed on the twelfth day after injection of the bacilli, and a *post-mortem* examination showed inflammation and ulceration of the Peyer's patches, with swelling of the mesenteric glands and spleen. Previously Remlinger had produced similar results in rabbits and rats, and Chantemesse in monkeys, by giving large doses of typhoid bacilli to those animals, along with their food. The blood of the affected animals gave Widal's reaction.

ETIOLOGY.—King Warry[2], Medical Officer of Health for the Borough of Hackney, reports that in June, 1903, an unusual increase in the number of cases of typhoid fever in the borough was noticed. This continued till September. The cases could be divided into two main groups, each having its centre in a particular street. The usual sources of the disease were investigated without the cause of the outbreaks being found (water, milk, ice-creams, and shell-fish). Warry, however, observed that in 64 per cent of the cases in one group and 55 per cent in the other, the persons attacked had eaten *watercress* within three weeks of the onset of the disease. He therefore caused seventeen samples of watercress to be taken from stalls and shops in the affected areas. Six of those samples came from beds at West Ham. All showed sewage organisms; and water from the West Ham beds was found to contain at least 50 *bacilli coli communis* to the cc. It was highly probable, therefore, that the cause of the outbreak was the

consumption of cress from beds that had been watered with sewage-contaminated water.

Diagnosis.—Of the acute infectious diseases, none presents greater difficulties in diagnosis at an early stage than does typhoid fever. Unfortunately the disease is so common amongst us, and is of so great importance on account of its severity and the ages of the patients it attacks, that a few remarks on the subject will not be unwelcome here, in spite of the fact that it is one frequently dealt with in the medical periodicals. As a rule the onset of the disease is slow; it is often described as being insidious. If by insidious it is implied that the patient cannot state when the illness commenced, then the statement is not quite accurate. The writer has found, that by careful questioning of adult patients, the time of onset of the disease can be fixed to the day in the majority of instances. But if by insidious it is meant that the symptoms are so slight and so wanting in any characteristic during the first few days, as to lead the patient to pay little attention to them, then no fault can be found with the term. The patient in the early stage will often keep about his work, thinking that he is suffering from a temporary indisposition which will speedily pass away.

The initial symptoms are those which are more or less common to all febrile states—loss of appetite, nausea, headache, sleep broken up by periods of wakefulness or disturbed by dreams, and pains in the limbs. Of these, headache is the symptom that usually attracts most attention; it is almost invariably frontal, and very persistent, though as the disease progresses, it disappears. The tongue becomes furred and the breath offensive. Often there is slight abdominal pain, and the bowels cease to act regularly, there being either constipation or diarrhœa. The patient's face has a dull, heavy look. Very occasionally the onset is sudden, and there may be even a slight rigor. In such cases the patient is soon obliged to give up his ordinary occupation. The temperature is raised, and the pulse moderately accelerated. The pulse is not infrequently dicrotic, a point to which attention has been drawn by Oddo and Audibert[3], and also by Ker[4], who has made the following valuable observations on this condition: "Two suggestive features are furnished by the pulse. Dicrotism is the rule, and the rate of the pulse, though more rapid than normal, is usually considerably lower than would be expected from the height of the temperature. A pulse, therefore, which presents this want of relation to the temperature, and at the same time is dicrotic, should also suggest that the fever is enteric. This want of relation is, however, frequently lost in the third week of the fever, when the pulse is apt to become more rapid; but it is an admirable guide in the first fortnight."

Other early signs are tonsillitis, slight bronchial catarrh which gives rise to some coughing, and epistaxis. Ker states that epistaxis occurred in nearly 30 per cent of his cases, but in the writer's experience it is not so common. Occasionally, the spleen is enlarged at an early

date. The presence of the symptoms mentioned above will lead to a strong suspicion, if not to an actual diagnosis. Until the appearance of the rose-coloured spots a positive opinion can hardly be pronounced upon clinical grounds. But there are four other aids which are available in some instances: The agglutination, or so-called Widal's test; the diazo-reaction; blood-counts; and the isolation of the specific bacillus. The bacilli can be cultivated *from the blood* in a very considerable number of cases. Thus Schottmüller[5] examined the blood of 101 consecutive cases of typhoid fever at Hamburg. He succeeded in cultivating the bacilli in 84 cases. In 39 cases out of 50, the bacilli were obtained on the day the patient was admitted to hospital. In cases where the bacilli had disappeared from the blood during defervescence, they re-appeared on the occurrence of a relapse. But the isolation and differentiation of the bacilli require the services of a skilled and experienced bacteriologist.

So, too, with regard to *blood-counts;* considerable experience is needed for making differential blood-counts. The proceeding is one, moreover, that occupies a good deal of time. According to most observers, in typhoid fever the number of leucocytes gradually becomes diminished from the commencement of the disease, though occasionally, during the first few days it may be increased. With respect to differential blood-counts, reference may be made to the observations of Higley[6], who gives the results of careful differential leucocyte counts made in cases of typhoid fever at an *early* stage. The number of cases studied was 16, and the diagnosis was established at a time subsequent to the count. The stage of the disease was determined by the date of the appearance of the eruption, which Higley states, on the authority of Osler and others, to be from the seventh to the tenth day. In 9 of the 16 cases the counts were made at least three days before the appearance of the eruption. For computing the averages, the counts made with Ehrlich's tri-acid stain were utilized, with the following results: Small mononuclears, 17·8 per cent; large mononuclears, 21·1 per cent; polymorphonuclear neutrophilics, 59·4 per cent; eosinophiles, 1·7 per cent. In the remaining 7 cases there was every reason to believe, though there was no absolute proof, that the counts were made during the first week of the disease. The averages of the different kinds of leucocytes were much the same as in the 9 cases. Seventeen cases of malaria were examined in a similar manner; 8 of them showed a marked relative increase in the polymorphonuclear neutrophilics, and hence could easily be differentiated from typhoid fever. In the malaria cases the number of eosinophiles was nearly always below 1·5 per cent, while in the typhoid cases it was usually above 1·5. From the figures given, it also appears that the percentage of small mononuclears is, as a rule, smaller in malaria than in typhoid fever (14 out of the 17 cases). The following are the conclusions drawn by Higley from his observations:—

1. Many cases of typhoid fever, contrary to general supposition, show the characteristic differential leucocyte count within the first week of the disease.

2. The definite value of the differential leucocyte count in the early diagnosis of typhoid fever is as yet problematical; but it seems certain that, when used in addition to the total leucocyte count, more information may be obtained than by employing the total count alone.

The *diazo-reaction* is a useful aid in the early stages of typhoid fever. According to Ker (*loc. cit.*) it rarely fails to appear before the sixth day, and continues to be present till the end of the second week. It is present in miliary tuberculosis and typhus fever, but rarely in acute pneumonia. "The chief value of the test . . . is rather its absence than its presence. A case of continued fever which at any time between the sixth and twelfth days does not give this reaction, is in all probability not a case of enteric fever. On the other hand, if it is present, it is necessary to exclude the eruptive fevers, miliary tuberculosis, and pneumonia, before assuming that the case is one of enteric. If these are excluded, a case giving the reaction is much more likely to be enteric than anything else—for instance, than influenza."

*Widal's*, or the *agglutination test*, unfortunately, most often fails during the early stage, but at a later stage it is very valuable. The serum should be diluted at least 1–20, preferably about 1–40. It is very rarely that the test remains negative all through the disease. On the other hand, very occasionally the reaction is positive in other diseases than typhoid fever. The observations of Josias and Tollemer[7] go to show that Widal's reaction is of the same value in children as in adults.

It is a curious fact, that in every fever hospital in the kingdom, of diseases sent in with an erroneous diagnosis of typhoid fever, acute *lobar pneumonia* easily heads the list as regards number. In the writer's experience these cases of pneumonia are well marked on admission; that is to say, there are well-marked physical signs of consolidation. Why this error should be made is not very clear. Pneumonia is much more sudden in its onset than typhoid fever. Possibly the cause of the error lies in the fact that in pneumonia, occasionally the spleen is enlarged, the abdomen tumid, and there is diarrhœa; also not infrequently there is abdominal pain, doubtless the referred pain of pleurisy low down in the thorax. Still, the error ought not to be made so often as it is; for though pneumonia occasionally complicates an attack of typhoid fever, it sets in later in the disease, and not at an early stage.

Treatment.—A great deal continues to be written every year on the treatment of typhoid fever. The subject appears to be very popular, and will therefore, doubtless, serve as a theme for many a future writer. It is instructive to note how widely divergent may

be the lines of treatment advocated by practitioners of special experience in this disease. Thus, to give examples from quite recent literature, in *The Practitioner* for January, 1904, which was devoted to typhoid fever, we find Sir John Moore writing as follows: "The treatment of constipation in enteric fever is, to my mind, more difficult than the control of diarrhœa. Allusion has already been made to the necessity for opening the bowels with caution in the early stages of the fever. This object is best achieved by a small dose—1 to 3 grs., or even only ½ gr.—of **Calomel** given at bedtime, and followed next morning by 7½ grs. of **Salicylate of Sodium**, with a drachm of effervescent **Citrate of Caffeine** in water; or a simple enema may be administered. Later on, and after the eighth day, calomel seems to be contra-indicated, and had better be withheld because of its power to increase peristalsis. The safest and best aperient, then, is **Castor Oil** given in teaspoonful doses, with 1 fluid drachm of **Glycerin** and 2 ounces of **Milk**, this dose being repeated at intervals of six hours until the bowels act regularly. An alternative would be tablespoonful doses of the **Mistura Olei Ricini** of the British Pharmacopœia of 1898." In the same number Herbert P Hawkins makes the following remarks: "As regards the action of the bowels, if there is constipation, a simple **Enema** should be given every third day, and no purgative is admissible from first to last. The use of aperient medicines, especially castor oil, still retains a few advocates. There is this apparent reason for their use, that the small intestine is thereby cleared, which is an obvious advantage over the opening of the lower bowel by an enema. But there is this greater reason against their use, that when extensive deep ulceration is present, the patient's life may depend on restraining rather than exciting peristalsis. If no peristalsis is excited, the purgative is useless. . . . The old practice of giving calomel during the first week of the illness has more to recommend it; but this also is not free from danger, unless the exact date of the onset is known, and the precise state of the intestine can be estimated. Most men believe in the wisdom of the old recommendation to 'lock up the bowels and keep them so.'"

Here we have almost diametrically-opposed advice on a certain important detail of treatment, given by two physicians of wide experience. And it would not be difficult to quote from other authors of repute very different views on other points, such as the cold-bath treatment, the antiseptic treatment, and so on. Again, there is hardly any disease for which specific drugs and lines of treatment are more loudly vaunted. Often, the evidence on which the favourable opinion is based is of the most slender kind; two or three, or at most a dozen cases. On the other hand, the number of cases treated sometimes runs to a hundred or two, with a case-mortality of from 0 to 4 or 5 per cent.

From the vast mass of various and often conflicting opinions thus

put before him, it must be very difficult for the general practitioner, who has only an occasional case of typhoid fever to treat, to satisfy himself that he is choosing the best advice. In fact, if he reads much on the subject, he must become very sceptical as to the value of any particular treatment whatsoever, especially if he happens to remember that in the South African war many cases of typhoid fever, on account of the circumstances, received no treatment at all worthy of the name, and yet contrived to die in very few numbers more per cent than in the best equipped hospitals at home, due allowance being made for the age of the patients. But, though scepticism may spring from a recourse to a multitude of authorities, yet it must not be inferred that none of the advocated methods of treatment are of value. All that can be justifiably concluded is that, taking a large number of cases, one of these methods of treatment is as good as another. The specific treatment of typhoid fever has yet to be discovered. I am well aware that this statement is opposed to what has been said by not a few writers on the subject, especially if they have been advocating the antiseptic treatment. But after a considerable experience of the disease, and trial of a number of drugs and methods, I adhere to what I have stated. The supposed proof of the efficacy of any particular drug is usually a lessened case-mortality. But the virulence and case-mortality of the disease vary so extremely from time to time, that an appeal to figures has very little weight with me ; and I further confess, that when I hear of series of cases with a case-mortality of 1 or 2 per cent, I remember that the diagnosis of the disease is not always easy, and that the inclusion of a number of cases of a doubtful but mild character (the simple continued fever and febricula of some writers) would go a long way to explaining the low case-mortality.

There being as yet, then, no specific treatment for this disease, every case must be treated on its own merits. While we may think that the advocates of special methods are not justified in their conclusions, yet we must not lose sight of the fact that special cases may benefit by special treatment. Indeed, I strongly suspect that the success of a particular treatment in certain cases has often been the cause of its advocacy for all cases. Take the antiseptic treatment (so called) of the bowel, for instance ; I am convinced from my own experience, that it is of great value in certain cases, where there is much looseness of the bowels with frequent offensive stools. But these do not constitute all, nor even a large proportion, of the cases of typhoid fever ; and to treat every case of the disease in this way, even those in which there is constipation, is irrational. The advocates of the routine use of intestinal antiseptics base their practice on the idea that the organisms of the disease are killed *in situ* by the antiseptic used. The degree of absurdity to which such an idea has been pushed is not far short of that attained in the following extract from a letter

written (we suppose) in jest.[8] The writer states that he treated a case of typhoid fever (which, however, was somewhat doubtful) with calomel (two small doses), followed by "$\frac{1}{8}$ minim of croton oil, put up in olive oil, given every hour. The effect of the croton oil seemed to be to clear out the bowels, so as more effectively than calomel alone, to expose the surface where the typhoid germs were to the action of the antiseptic, corrosive sublimate, given by the mouth, the administration of which was soon followed by sensations of movement in the bowels, which we thought preceded an evacuation. They continued all Sunday without any evacuation, but on Monday morning, on waking, they were gone without any evacuation; temperature was normal, so these sensations appear to have been due to a conflict between the corrosive sublimate and the germs, particularly as when temperature was normal, and presumably germs dead, the antiseptic was continued without any such sensations."

Though the idea is here expressed in its very crudest form, yet it is the basis of the antiseptic practice—the germs can be killed *in situ* in the intestines. I confess that I was surprised to find Sir John Moore, in the article already quoted, writing of a dose of calomel disinfecting the intestinal canal. My conception of disinfection must differ widely from his. But most of the advocates of intestinal antisepsis appear to think that the alimentary canal can be treated like a test-tube; in fact, they frequently back up their arguments with experiments *in vitro*. You grow bacilli in broth; you then add some of the antiseptic you intend to employ in your typhoid cases, and incubate for a few hours; lo and behold, the bacilli are killed! Apply the same treatment to the human intestine. It is a hollow tube (more or less): it contains bacilli; pour in some of your antiseptic, and the bacilli will be killed. It is so simple! But unfortunately for this argument, in the first place it is extremely doubtful whether antiseptics can be made to come in contact with every part of the mucous surface of the intestine. Secondly, if they can, a solution sufficiently potent to destroy the germs will affect injuriously the mucous membrane. Thirdly, the germs are not confined to the interior of the intestinal canal. They penetrate the walls of the bowel, invade the mesenteric glands, and get into the blood, by which they are conveyed to other organs. There can be little doubt that a more or less general invasion occurs within a few days of infection. This fact is either forgotten or ignored by the antiseptic school.

I have ventured to make these remarks on the antiseptic method, because it is the one most commonly vaunted. Every new antiseptic put on the market by enterprising chemists will readily find some practitioner who will try it in a few cases of typhoid fever, and will say of it that it is the most efficacious drug he has ever used. As already said, in certain cases antiseptics appear to do good; but though I have tried a considerable number of them, I cannot say that one is

better than another. The practitioner must use the one that he thinks the best and safest.

One of the most sensible papers on the treatment of typhoid fever that I have read is that by Morris Manges[9]. From it are quoted the following remarks on points not touched on previously in these pages :— "The secret of success in treating typhoid fever lies in individualization, anticipation of coming complications, and intelligent supervision of details. I maintain that the first and most important thing in the regulation of the diet . . . is to give proper directions to the nurse, that the mouth shall be kept moist, and the tongue and fauces clean. Each visit should include a thorough inspection of those parts. Too little stress is laid upon the systematic drinking of large quantities of water. Any pure water may be given. Charged waters are contra-indicated, since the charged gases may increase the tympany ; and, moreover, it is difficult for anyone to drink large quantities of charged waters." Manges advocates dilute hydrochloric acid during the febrile period, on the ground that the secretion of hydrochloric acid in the stomach is very much reduced in all febrile conditions. Equally useful is the routine washing-out of the lower bowel with a quart of saline solution. Stagnation in the lower bowel is prevented, and the expulsion of gas is favoured. When there is much tympany these should be used twice daily, and the aromatics, like peppermint, fennel, or chamomile, should be added to the irrigating solution.

Clinical History, etc.—Edsall[10] draws attention to the fact that, in a considerable number of cases of typhoid fever, all or many of the lymph glands that can be felt in the living subject may be enlarged, especially the glands in the groin, axilla, and anterior and posterior parts of the neck. As a rule the enlargement is moderate. The enlargement occurs rather late in the disease. His observations, however, do not indicate that the recognition of the glandular enlargement is of any material use in diagnosis or prognosis. Indeed, he states that he is "convinced that glandular enlargement occurs much more frequently in many infectious diseases than the common descriptions of these diseases would lead one to believe. This has recently been clearly shown by Schamberg to be true of scarlet fever, and also of measles." My own experience is quite in agreement with that of these two observers.

Delafield[11], in a paper entitled "Post-typhoid Sepsis," distinguishes different kinds of post-typhoid fever. Quite apart from relapses, there are three conditions :—

1. The ordinary moderate rises of temperature, only lasting for a few hours, occurring within three weeks after the end of a typhoid fever. These short fevers would not be recognized at all, unless the temperature was systematically taken, for they are not attended with any symptoms, and do no harm. The only important thing about them is to understand that they are not of importance.

2. The post-typhoid fevers, which are of real importance, and last for one or more weeks, but yet do not make the patient very ill, and are not fatal. This form follows attacks of typhoid fever of two, three, or four weeks' duration. Sometimes the secondary form is continuous with the fever of the attack of typhoid, at other times there is an interval of normal temperature between the two fevers. In the secondary fever, the morning temperature is usually normal or thereabouts, but the evening temperature is raised, it may be several degrees. There are no other symptoms (such as delirium), and the tongue keeps moist and clean; but if the evening rise of temperature is excessive there may be shivering. The patients are hungry. This author agrees with Da Costa in stating that, in order to bring these attacks of mild secondary fever to an end, it is necessary to get the patients out of bed and give them solid food.

3. Much more important than these mild fevers are the severe and long-continued post-typhoid fevers, which may terminate fatally. They occur regularly after well-marked and severe typhoid fevers which run their full four weeks' course. The septic fever is continuous with the typhoid fever. Sometimes it will even overlap it, so that both fevers seem to be going on together in the fourth or fifth week. The morning temperature is usually about 100° F., and the evening about 103°, though not infrequently, at irregular intervals, it is higher, 105° to 107°. With these high temperatures there are often rigors. The patient is dull and apathetic, but not actively delirious; the tongue is dry; there may be nausea and vomiting, and yet a desire for food. Flesh is lost rapidly. Complications may arise, especially thrombosis of the femoral veins. In fatal cases, the intestinal lesions are healed or healing. The condition appears to be one of septicæmia. The treatment is to get the patient **Out of Bed**, and to **Increase His Food.** "It must be confessed that it requires a good deal of courage to take out of bed a patient who is apparently dying. But I am fully convinced that the only way of saving the lives of the bad cases is to feed them and take them out of bed." [It appears to be only a question of degree between the second and third forms of post-typhoid fever described by Delafield.—E. W. G.]

Now that it is agreed that **Laparotomy** offers practically the only chance of recovery in that most serious complication, *perforation of the bowel*, the diagnosis of this condition has assumed a far greater importance than it formerly held. We have now to recognize the accident, not simply that it may give warning of the inevitable end to the patient or his friends, but that by timely surgical aid we may endeavour to avert that end. Until recently it was thought that operative interference was likely to bring about a successful result if resorted to a few hours after the occurrence of perforation, rather than at once. But the accumulation of experience points the other way; and hence early diagnosis has become of extreme importance.

During the past year four papers dealing only with the question of diagnosis have been published, of which the authors are Donald Armour[12], Hector Mackenzie,[13] Harte and Ashhurst[14], and the writer of these notes[15].

Riesman[16] draws attention to the fact that *desquamation* not uncommonly follows an attack of typhoid fever. This desquamation is of some importance, because it not infrequently leads to the erroneous opinion that the patient has been suffering from scarlet as well as typhoid fever. In addition to the three varieties of the desquamation which are given by Riesman, prodromal and accidental erythemata should be mentioned. These are often very widely spread over the skin of the trunk, extremities, and even face. Sometimes they appear to be due to purgative enemata. Fine, branny desquamation may result.

References.—[1]*Brit. Med. Jour.* April 9, 1904; [2]*Lancet*, Dec. 12, 1903; [3]*Gaz. d. Hôp.* 1902; [4]*Pract.* Mar. 1904; [5]*Münch. Med. Woch.* 1902; [6]*Med. Rec.* Sept. 19, 1903; [7]*Med. Press*, Aug. 26, 1903; [8]*Aust. Med. Gaz.* Mar. 21, 1904; [9]*New York Med. Jour.* April 23, 1904; [10]*Amer. Jour. Med. Sci.* April, 1904; [11]*Med. Rec.* Sept. 12, 1903; [12]*Lancet*, Oct. 3, 1903; [13]*Pract.* Jan. 1904; [14]*Ann. Surg.* Jan. 1904; [15]*Lancet*, July 2, 1904; [16]*Amer. Jour. Med. Sci.* Jan. 1904.

**ULNAR NERVE (Recurrent Dislocation of).** *Priestley Leech, F.R.C.S.*

This condition has been known for some time, but it is not very common. Farrar Cobb[1] reports a case which was successfully cured by operation. Recurrent dislocation of the ulnar nerve at the elbow may occur from: (1) Non-traumatic causes, the so-called habitual, congenital, or idiopathic cases; (2) From trauma. The non-traumatic cases are the more numerous, and the symptoms being as a rule slight, they do not call for operation. Collinet found 13 cases of forward dislocation on flexion of the forearm, out of 500 persons examined, and Drouard 3, out of 200 cases examined. The majority of these persons had no symptoms.

Cobb's case was a lumberman, fifty-two years old, who had knocked his elbow against a post two years before; there was no fracture, and the swelling subsided, but in a month pain began and constantly increased; the pain was severe over the inside of the elbow and down the inner side of the forearm into the two inner fingers of the hand. Twelve months later he noticed that the pain was produced by flexion of the forearm, and that there was a "round cord" at the inner side of his elbow that slipped forwards and backwards on flexion. He had been disabled from work for six months. Pressure on the nerve caused pain, but no loss of sensation in the region supplied by the nerve. On operation, the portion of nerve between its emergence from the triceps and its entrance between the heads of the flexor carpi ulnaris was fusiform in shape, and as thick as a lead pencil. There was no arcuate ligament over the nerve, and the groove in the bone where the nerve should have lain was filled up with fibrous tissue. What

had evidently happened in the original injury, was tearing of the muscular and fibrous structures at the back of the joint. The fibrous tissue filling up the groove was removed, the nerve was replaced in this groove thus re-formed; and the fibres of the triceps turned back from the groove, together with a portion of the fascia, were carefully sutured to the fascia covering the flexor carpi ulnaris, thus covering over the nerve and its canal. An absolute cure resulted.

A summary of fifteen cases of the same condition are given. Operation should be done only when symptoms are present.

REFERENCE.—[1]*Ann. Surg.* Nov. 1903.

**URINE.** *Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

An altogether new application of chemistry in the examination of the urine has been suggested by Mr. P. J. Cammidge[1], for the recognition of serious disease of the pancreas. The method employed is a modification of the phenyl-hydrazin reaction, the formation of certain crystals being held to be an indication of pancreatic disease. We must refer our readers, for details of the method, to the original paper. Its value has, however, been disputed by Dr. C. E. Ham and J. B. Cleland[2], who state that they have obtained the characteristic crystals from the urines of normal people, and from patients in the general wards of the London Hospital, who were not suffering from any pancreatic disease. Moreover, distilled water and lead acetate solution give the same result, and they appear to consider that the presence of lead salts is the real cause of the formation of the crystals described by Mr. Cammidge, as these do not appear after the lead salts had been carefully removed. Mr. Cammidge, in defending his methods, says that their results have been due to imperfect technique, and that the crystals they have found are quite distinct in behaviour and appearance from the crystals described by him as characteristic of pancreatic disease. Dr. O. C. Gruner[3], however, states that he has obtained positive results in cases where no pancreatic lesion was suspected, and in one, a case of chronic bronchitis and dilated heart, the pancreas examined *post-mortem* showed no abnormality.

W. H. Willcox[4] states, that if normal urine is boiled with a tenth of its volume of strong hydrochloric acid, for from 5 to 10 minutes, certain substances present are no doubt hydrolized, and it has been his experience, after neutralizing the excess of acid and applying the phenyl-hydrazin test, that invariably very characteristic yellow crystals are obtained, which are undoubtedly osazones. He failed to obtain crystals with pure solution of glycerin, although Cammidge had suggested that the compounds which give the crystals in pancreatic disease were probably derived from this substance. He thinks that his experiments show, that normal urine invariably contains some substance which, after hydrolysis, always yields a substance, probably a sugar, which gives very characteristic crystals with phenyl-hydrazin.

As hydrolysis by boiling with hydrochloric acid forms an essential part of Mr. Cammidge's method, it is clear that the question of its value at present remains open. Mr. Cammidge[5] has promised a further paper, in which he hopes to deal with his critics.

The ordinary tests for bile pigment in the urine are not so satisfactory that we should not welcome improvements. A. Jolles[6] proposes the following modifications of the **Iodine Test**; 10 cc. of urine, 2 cc. chloroform, and 1 cc. of 10 per cent barium chloride, are well mixed and centrifugalized; the chloroform and watery fluids are removed, and the tube filled with distilled water; after further centrifugalization 5 cc. of alcohol and a few drops of iodine solution are added to the residue, and the mixture heated to 70 C. for a few minutes, and then filtered. The slightest trace of bile pigment is shown by a greenish blue colour in the filtrate. The iodine solution is prepared by taking 0·75 gram of mercuric chloride and dissolving it separately in 125 cc. of alcohol, mixing the two solutions, and adding 250 cc. of concentrated hydrochloric acid.

W. Schlesinger[7] recommends a test based upon the production of **Fluorescence.** To a measured quantity of urine is added the same quantity of a 10 per cent solution of zinc acetate in alcohol; the mixture is filtered, and the clear filtrate shows a very decided green fluorescence in the presence of as little urobilin as 0·002 per cent. The fluorescence is best seen through a convex lens; the filtrate shows spectroscopic bands clearly.

*Tubercle bacilli* in the urine are usually found only in scanty numbers and are difficult of demonstration by the methods usually pursued. Edgar Trevithick[8], of Cheltenham, recommends that the urinary deposit should be centrifugalized, and the supernatant fluid being decanted off, the glass is filled with distilled water, the centrifugalate shaken up, and centrifugalized again. The process is then repeated a third time, and from the final centrifugalate the films are prepared. He says that the number of tubercle bacilli in such films are greatly in excess of those demonstrated from the same urine where the urinary salts have not been washed away in this manner. He believes that it is as easy to demonstrate the tubercle bacilli in urine as in sputum, and that the bacilli are not less but even more abundant in the former. He thinks this is due to the ease with which the bacilli may be concentrated by centrifugalizing urine.

The value of **Hay's Test** for bile salts is confirmed in a striking manner by a communication made by J. Sabrazes and P. Laffargue[9], who describe the case of a patient aged fifty-eight, suffering from pigmentary atrophic cirrhosis of the liver with ascites, in whose urine there was a large quantity of bile pigment, but which gave no reaction with Hay's test. This test, we may remind our readers, is that when sublimed sulphur is sprinkled on the surface of a fluid containing bile salts, it sinks rapidly, whereas, in the absence of these salts, it floats on

the surface. Some days afterwards, when a mixed diet was substituted for milk, Hay's reaction became positive, and bile salts without bile pigment appeared in the urine. The administration of theobromine stopped the elimination of bile salts, and Hay's re-action disappeared; but under treatment with digitalis the urobilin reappeared without being accompanied by bile salts or Hay's reaction. The reaction, therefore, in this case was independent of the bile pigment, but was closely connected with the presence of bile salts in the urine.

Dimmock and Branson have devised a new method for the determination of the amount of *uric acid* in the urine, by precipitating it as ammonium urate. The quantity of uric acid is then determined by the hypobromite method as nitrogen. It is said to be quite suitable for proportions of uric acid ranging from 1–1000 to 1–10,000, but requires a special apparatus. According to Mr. G. L. Eastes[10], the advantage of the method described over that of Hopkins is that it shortens the time occupied by at least two hours, and could be as a rule accomplished in one day, while the result is sufficiently accurate for clinical purposes.

We can do little more than refer our readers to the new method of testing blood and urine suggested by Dr. A. E. Wright and Mr. Kilner.[11] The proceeding involves the determination of the hæmolytic index of the urine or blood, as the case may be, which they believe gives the measure of the salt content of the fluid. The value of the data obtained by this means can only be determined by prolonged clinical experience, while the details are too long to be given here in full, and too complex to be safely compressed.

References.—[1]*Lancet*, Mar. 19, 1904; [2]*Ibid*, May, 1904; [3]*Ibid*, May 21, 1904; [4]*Ibid*, July 23, 1904; [5]*Ibid*, July 30, 1904; [6]*Deut. Arch. f. klin. Med.* lxxviii. p. 137, 1903; [7]*Deut. Med. Woch.* Aug. 6, 1903; [8]*Brit. Med. Jour.* Jan. 2, 1904; [9]*Gaz. Hebd. des Sci. Mid. de Bord.* Oct. 18, 1903; [10]*Brit. Med. Jour.* Sept. 12, 1903; [11]*Lancet*, April 2, 1904.

**URTICARIA.** *Norman Walker, M.D*

In a case described by Bendix[1] acute urticaria invariably followed the ingestion of an egg. The child, which was thirteen months old, was otherwise healthy except for slight signs of rickets. On three occasions, the reaction appeared after five, seven, and eight minutes respectively. Albumin of meat and milk caused no inconvenience, and to prove that it was due to intestinal absorption, *e.g.*, egg-albumen was rubbed on the skin without any bad effect. Following on this, the author tested two chronic cases of urticaria by the omission of eggs from the diet. The result was successful. Locally, he now uses equal parts of **Anæsthesin** and **Menthol** in an ointment, which is applied after the child has been first bathed and rubbed with **Acetic Acid**, and the skin allowed to dry. **Salicin**, **Antipyrine**, and **Calcium Chloride** are given internally, and should these measures fail, a course of treatment at Carlsbad or Kissingen may be tried.

Writing of urticaria papulosa, Meachen[2] considers that the itching is probably due to pressure of blood and lymph in the capillaries of the papules, a condition which causes irritation of the nerve terminations. Toxins in the blood may also have an influence in the production of the itching. The treatment he adopts is the exhibition of **Grey Powder** and **Soda**, followed by **Salol**. Starchy foods are stopped or reduced, and meat juice or albumin water given. Locally an alkaline lotion containing 5 to 10 ℥ of **Carbolic Acid** in the ounce is most effectual.

REFERENCES.—[1]*Deut. Aerzt. Ztg.* Jan. 1904; [2]*Clin. Jour.* Dec. 9, 1903.

**UTERUS (Displacements of).** *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

TREATMENT.—The most debated question in the treatment of backward displacements of the uterus has for a long time been this: What are the relative claims upon our confidence of **Pessaries** and **Operative Measures?** We doubt if any gynæcologist in these days would take up the extreme position of champion of either plan, to the total exclusion of the other; the day of advocacy of pessaries in all cases has passed away, and that of pleading for operation in every case has not arrived, and is unlikely to do so. Meanwhile there is a growing tendency to extend the indications for operation, and to restrict the scope of pessaries. Among those who have had the opportunity of trying both plans, and watching results, there are few, if any, who are enthusiastic about pessary treatment.

Eden[1], in comparing the two methods, says: Treatment by a pessary has been long established, and is of engaging simplicity. The objections to it are: (1) That it frequently fails to achieve its object; (2) That its use once begun, can seldom be discontinued, *i.e.*, it is palliative, not curative; (3) That it is a dirty method, and may lead to inflammation, ulceration, or sloughing of the vaginal walls. For these reasons he regards the use of a pessary as a temporary measure only, and restricts its application to those cases alone in which temporary measures will suffice. The frequent failure of pessaries is now generally admitted by writers who have taken the trouble to record and analyse a series of cases. Thus Sänger[2] reports, that of 49 cases treated by pessaries, only 7 cases (14·3 per cent) were cured, while 42 (85·7 per cent) were unrelieved. Fränkel, out of 294 cases treated by pessaries, could report only 8·2 per cent of cures. On the other hand, Klötz and Prochownick have reported 24 to 25 per cent of cures. But a method by which such a small proportion of cures can be obtained as 8 to 25 per cent, cannot be recommended with any degree of confidence.

He finds that the class of cases in which pessaries can be advised, is best arrived at by a process of exclusion. Unless the uterus can be first replaced, a pessary is useless; this at once excludes cases in which such independent complications as adhesions of the uterus,

and sometimes a uterine fibroid, are present. Nothing can be more futile than to introduce a pessary without first replacing the uterus by the fingers or with the help of a sound. In the next place, if it is found that the uterus returns to its faulty position, notwithstanding the presence of the pessary, it is useless to continue this method, provided that the instrument was of a suitable size and shape. Again, even supposing that the uterus is retained in position, it may be impossible to discontinue its use, and no woman should be condemned to wear a vaginal pessary for the rest of her life, or at least for years, when other methods of relief are open to her.

From this it follows, that pessaries are most suitable for those cases of "simple" displacement which require treatment. In puerperal cases, for example, one meets with success almost invariably; for after a few weeks or months have elapsed, and the delay in the process of involution has been made up, the restored uterus will remain in its normal position without further assistance, and a permanent cure results. It is seldom necessary for the instrument to be worn for more than six months in such cases. In cases complicated by endometritis and cervical changes, the chances of success are not so good, and many will ultimately require operation. Cases complicated with prolapse of the ovaries are rather more favourable for the use of a pessary, provided that the ovaries return to their normal position when the uterus is anteverted. Sometimes they will be found adherent, the adhesion being easily palpable as the uterus is carried forward, and the ovarian ligament put upon the stretch. Such cases cannot be relieved by pessaries. The independent complications practically always contra-indicate instrumental treatment. The form of operative treatment that Eden recommends is ventro-fixation.

*After-results of Operative Measures.*—Operations of election, undertaken for conditions which impair health and usefulness rather than threaten life, have to be judged chiefly by their results; and by results we mean, not the percentage of mere recoveries from operation, but the extent to which symptoms are relieved, and health and usefulness restored. Baatz[3] analyses a long series of after-histories of operations undertaken for the cure of prolapse and retroversion, and reports that the results are satisfactory. In reviewing the various kinds of operation in relation to the conditions present, he concludes:—

1. All cases of prolapse of the vagina without retroversion of the uterus, are best treated by plastic operations on the vagina itself.

2. Ventro-fixation of the uterus and plastic treatment of the vaginal canal, according to the circumstances of the case, are indicated in all cases of prolapse of the vagina with retroversion of the uterus, but without loss of mobility, in women during the child-bearing time of life; also in primary uterine prolapse, in vaginal prolapse with irreducible retroflexion, and in total procidentia in women capable of bearing children.

3. Ventro-fixation and plastic vaginal operations combined are also advisable in reducible retroversion and vaginal prolapse, and in total procidentia in patients who have attained the change of life.

4. Ventro-fixation alone is the best treatment for retroversion, reducible or fixed, and not complicated by vaginal prolapse.

5. Supra-vaginal amputation is necessary in all cases of considerable elongation or hypertrophy.

It is well known that the adhesion of the uterus to the abdominal wall sometimes stretches after a ventro-fixation, with the formation of a band or bands, which might theoretically involve intestinal obstruction. But although cases have been reported in which such bands have occurred, we do not, at the time of writing, recall one that has been followed by untoward results. Lucksh[4] relates a necropsy, which is of interest in this connection. The patient in this case was operated upon by Rosthorn in March, 1898; two catgut sutures were employed, and seven months later the uterus remained in its normal position. The patient died of emphysema in 1902 at the age of thirty-five. Lucksch found three bands 3 inches long, running free between the right cornu of the uterus and the parietal peritoneum, in the neighbourhood of the inner end of Poupart's ligament. No trouble had been caused by these bands, but it is clear that they might easily have come into unfavourable relations with intestine. One band was $\frac{1}{5}$ inch thick, the others as stout as linen thread. The uterus lay in its normal position as in October, 1898; thus the operation had cured a displacement, at the risk of graver evils.

Applegate[5], in discussing the relation of various operations to subsequent pregnancy, thought that the safest method of suspension of the uterus was by sutures introduced in front of the origin of the tubes, instead of through the fundus. In the discussion on Applegate's paper, Dunning remarked that of 165 cases of suspensory operations (ventro-fixation), 8 had become pregnant and had gone through labour without complications; and Fry stated that of 150 operation cases, 15 went subsequently through pregnancy and labour without complications or relapse.

References.—[1]*Pract.* May, 1904; [2]*Jour. Obs. and Gyn.* vol. ii. p. 196; [3]*Monats. f. Geb. u. Gyn.* Mar. 1904; [4]*Prag. Med. Woch.* No. 4, 1903; *Brit. Med. Jour.* Nov. 2, 1903; [5]*Med. Rec.* July 2, 1904.

## VACCINATION.

*E. W. Goodall, M.D.*

Alan Green[1] has recently demonstrated that the use of a solution of **Chloroform** in distilled water, eliminates the extraneous bacteria of vaccine lymph in from one to six hours. The solution of chloroform that can be most advantageously used for the purpose, is a saturated one, having a strength of 1–200.

The following is the method of preparation of chloroformed calf-vaccine: Vaccine emulsion is first prepared by triturating vaccine pulp with distilled water. The presence of the water is essential in

order that, later, chloroform may enter into solution with it. About three parts by weight, of water, should be mixed with one part, by weight, of pulp. A stream of dry, sterile air is passed through pure liquid chloroform, and becomes charged with chloroform vapour. It is then passed through the vaccine emulsion which is contained in a suitable vessel or tube. It is essential that no liquid chloroform be allowed to pass over into the emulsion, as it has an injurious action upon the lymph. A rapid and marked germicidal action is exerted on the non-spore-bearing, extraneous bacteria of vaccine, by the solution of the chloroform in the water of the emulsion. The extraneous bacteria most commonly found in vaccines at the Government Laboratories are *staphylococcus pyogenes aureus*, *staphylococcus pyogenes albus*, *staphylococcus cereus flavus*, and *staphylococcus cereus albus*. Less commonly *staphylococcus pyogenes citreus*, *proteus vulgaris*, *streptococcus pyogenes*, *sarcina lutea*, and some yeasts occur. Under the action of the chloroform water, emulsions of vaccine lymph that have contained as many as 100,000 extraneous micro-organisms per platinum loopful at the time of mixture, become free from organisms in from one to six hours. After the elimination of the organisms, the chloroform is evaporated from the emulsion by the passage of a stream of sterile air. Spore-bearing organisms are not eliminated by this process ; but in some thousands of vaccines examined at the Government Laboratories the only spore-bearing organisms found have been the strictly non-pathogenic organisms of the mesenteric group—*B. mesentericus vulgatus*, *B. mesentericus furcus*, *B. mesentericus rubri*, and *B. subtilis*, with certain moulds, such as penicillium glaucum. As the result of some experiments undertaken to determine the effect of temperature in the elimination of the extraneous organisms from crude calf-vaccine by the chloroform process, Green found that the most favourable temperature at which to carry out the process was between 18° and 23° C.

If pure chloroform is prevented from getting to the lymph, the specific organism of vaccine (whatever it may be) is unaffected ; and a high percentage of success is obtained by the use of chloroformed vaccine, as is shown in the following table, which gives the results obtained with forty-five such vaccines :—

| Chloroform Vaccines used for | | Percentage Success. | |
|---|---|---|---|
| Kind of Vaccination. | Number of Cases. | Case. | Insertion. |
| Primary Vaccinations . | 38,873 | 97·8 | 91·2 |
| Re-Vaccinations .. .. | 12,154 | 97·1 | 91·9 |
| Total .. .. | 48,027 | 97·6 | 91·3 |

Emulsions of vaccine lymph, purposely contaminated with the following organisms, were subjected to the chloroform process: *B. proteus vulgaris*, *B. prodigiosus*, *B. pyocyaneus*, *B. fluorescens liquefaciens*, *B. coli communis*, *B. typhosus*, *B. diphtheriæ*, *B. mallei*, *B. pestis*, *B. tuberculosis*, and *spirillum choleræ asiaticæ*. In each case, the extraneous organism was killed in a few hours.

Chloroformed vaccines, if stored in the dark at 10° C., remain efficacious for certainly six weeks. The chloroform process is of more service than the glycerin process at present in use, because it eliminates the extraneous organism much more quickly, and therefore allows of a more rapid manufacture of lymph for distribution, a point of importance in times of small-pox prevalence, when there is a large demand for lymph. Moreover, the potency of the specific organism of vaccine, deteriorates with time. Some loss of potency takes place, even in the few weeks necessary for the elimination of extraneous organisms by the glycerin method. But the action of the chloroform solution is so rapid, that lymph so treated can be issued for use within a few days, before any deterioration of the specific action has had time to take place. This feature might be of great use in hot climates, where the preservation of the potency of vaccine is frequently a matter of considerable difficulty.

REFERENCES.—[1]*Proc. Roy. Soc.* 1903-4; *Lancet*, June 20, 1903; *Ibid*, May 28, 1904; *Rep. Med. Off. L.G.B.* 1902-3, App.

**VARICOCELE.** *Priestley Leech, M.D., F.R.C.S.*

Thornburgh[1] records eighteen cases of this condition on which he operated successfully. His rule has been to operate on those cases when the varicocele was larger than or as large as the sound testis. After sterilization, the operator pushes his finger into the external inguinal ring, and a nick with a knife is made over the point of the finger, and with this nick as a guide, an incision 3 cms. long is made, parallel to Poupart's ligament; the cord is isolated, drawn up, and 5 to 6 cms. of the veins are removed, the two ligatured ends being tied together. No attempt is made to separate and isolate the spermatic artery and vein. [This is exactly the method described by Bennett and noticed in *Medical Annual*, 1902, p. 625.]

REFERENCE.—[1]*Med. Rec.* Aug. 29, 1903.

**VARICOSE ULCER.** *Priestley Leech, M.D., F.R.C.S.*

Le Roy[1] describes an ambulatory treatment for varicose ulcers. Several muslin bandages 5 metres in length and 7 cms. wide are immersed in a 2 per cent solution of hot formol for half an hour. They are then dried and dipped in the following solution :—

| ℞ | | | | |
|---|---|---|---|---|
| | Boiled water | 180 grams | Gelatin | 50 grams |
| | Glycerin | 100 grams | Zinc oxide | 40 grams |

This mixture should be half liquefied in a water bath. The leg is cleansed, and the ulcer washed with formol solution. After drying,

the prepared bandages are applied from the toes to the knee : it is dry in half an hour, and forms a supple, elastic boot. If the ulcer is large, the boot may be renewed every five days ; otherwise, twice a week. Walking in moderation is advised, to promote circulation.

REFERENCE.—[1] *Jour. de Méd. de Paris*, July 19, 1903 ; see *Treatment*, Jan. 1904.

**VINCENT'S ANGINA.** *E. W. Goodall, M.D.*

It is well known by those who have a wide experience of the acute infectious diseases that are accompanied by morbid conditions of the fauces, that there are forms of acute throat lesions which simulate very closely both diphtheria and scarlet fever. These throat lesions have been described under different names ; but little, if anything, has been known of their pathology. A few years ago, however, Vincent[1] associated one of these forms of sore throat with the presence of certain micro-organisms ; and subsequently, more than one investigator has occupied himself with the subject. An excellent account of the disease has been published in this country by Bruce[2] (who gives a full bibliography), and from his paper we take the following details :—

The chief clinical characteristic of Vincent's angina is a necrosis of the mucous membrane. In mild cases this may be superficial ; but in the more severe instances it spreads deeply, involving the whole thickness of a tonsil or of the uvula, and leading to considerable loss of tissue. The onset is insidious ; there is seldom pain, or at any rate marked pain, in the throat. The cervical glands may be enlarged ; slight headache and general malaise may be present. There is slight and transient pyrexia. Albuminuria is seldom present. Examination of the throat in the early stage, shows what appears to be a patch of exudation situated on some part of one tonsil, or on the upper part of a tonsil, the upper part of the uvula on the same side, and the edge of the soft palate between. The latter situation is unusual in diphtheria, and should arouse suspicion as to the nature of the complaint The pseudo-membrane is yellowish or greenish-yellow in colour. It is detached only with difficulty, leaving a bleeding, eroded surface, and it has a very distinct fœtor. If this is not sufficient to taint the breath, it can be readily detected by rubbing a swab on the patch. The appearance of the throat in this early stage may exactly resemble that produced by the formation of the membrane of diphtheria. But the after-course of all but the mildest cases, clearly shows that no such formation of membrane has occurred, and that the patch is the result of necrosis of the superficial layer of the mucosa, and not of the formation of membrane upon the surface.

In slight superficial cases the ulceration heals in a week or ten days ; but in the more severe cases with deep sloughing, healing may not be complete for three or four weeks, and some contraction of the parts affected may result. Bruce gives an account of 10 cases, 2 of which were fatal, one from toxæmia, the other from broncho-pneumonia.

In this case the necrotic process spread to the larynx. Probably the case-mortality is much lower than that of diphtheria. In the majority of cases a complete recovery ensues.

Bacteriology.—Cultivations taken from the throat do not yield characteristic results, the most frequent organisms present being pyogenic cocci. If, however, a little of the exudation be rubbed on a slide and stained with any aniline dye, a characteristic bacillus is seen in great numbers, and with it is frequently seen a spirillum. The relative number of the two vary. The bacillus predominates in the mild, and the spirillum in the severe cases. The bacillus, called by Vincent the "fusiform bacillus," is 10 or 12 $\mu$ in length. Its centre is a little thickened, and its ends pointed. Usually, the bacilli are uniformly distributed through the field. Sometimes they are present in such numbers as to form almost solid masses. The bacillus is readily stained by aniline dyes, but not always uniformly throughout its length. It does not give the Neisser staining reaction, and is decolorized by Gram's method. Its motility is doubtful; though Barlow[3] states that both the bacillus and the spirillum move freely in the hanging drop. The spirillum becomes only faintly stained by the ordinary reagents, and is decolorized by Gram's method.

Both the above-mentioned organisms have been found in small numbers, not only in other morbid conditions (especially ulcerative stomatitis, etc.) of the pharynx and mouth, but also in the normal mouth. Neither of them has been cultivated on artificial media; and inoculation experiments, with portions of the exudation from the faucial ulceration, have so far failed to yield any positive results. It cannot, therefore, be stated that these organisms cause the disease.

References.—[1]*Bull. Soc. Méd. Hôp.* Mar. 11, 1898, and Jan. 12, 1899; [2]*Lancet*, July 16, 1904; [3]*Met. Asyl. Board's Rep.* 1903.

**VISION (Defects of).** *A. Hugh Thompson, M.D.*

*Ocular Headaches.*—The importance of correcting small degrees of astigmatism in patients who suffer from headache, is emphasized by Snell[1]. Out of 800 refractive cases in his private practice, about one in five sought advice on account of headache. Out of 300 cases analysed, just about one-half (144) proved to have hypermetropic astigmatism. Of these the cylinders prescribed in 23 cases were as low as + 0·25 D. In 47 cases they were + 0·5 D. and in 30 cases + 0·75 D; so that in two-thirds of this series of cases the cylinders prescribed were under 1 D. The benefit of these weak + cylinders, he says, was undoubted.

On the other hand, Brudenell Carter[2], replying to Dr. J. M. Gould, of Philadelphia, states that a small degree of astigmatism is rather the rule than the exception in the human eye; that in the great majority of persons, an astigmatism not exceeding half a dioptre produces no symptoms of any kind; that astigmatism of the cornea is often either increased or corrected by similar or opposite astigmatism of the lens,

and that the astigmatism as a whole may therefore either appear or disappear at the period of presbyopia; and that the "eye-strain," alleged to exist in America as a consequence of low degrees of astigmatism, has no parallel in the experience of English practitioners. Out of Snell's series of cases, 84 per cent were females, which shows that other conditions must be present favouring the headaches, besides the purely ocular ones.

The same is probably due of *heterophoria*. Zimmermann[3], comparing a large number of cases whose refraction he corrected, divides them into two series—one in which there was no complaint of headache, the other in which there was. In the first series, the proportion in whom each variety of heterophoria was found, proved to be as large as, or even larger than, in the second. And yet it cannot be doubted that there are cases in which the correction, at any rate of hyperphoria, relieves symptoms when other means have failed.

In the paper already referred to, Snell points out another less frequent cause of ocular headache, namely, that unaccustomed strain on the elevators of the eyes which causes "academy headache"—prolonged gazing at pictures hung above the line, without throwing back the head. A similar strained position may cause nystagmus in miners, and a premonitory symptom of this nystagmus is headache. In the same way, a bicyclist who rides with his head low down may give himself a bad headache, which could be avoided by sitting straight up.

*Strabismus.*—Worth's book[4] on "Squint" marks a distinct advance both in the theory and treatment of internal strabismus. Perhaps no previous writer has shown so clearly that the one essential factor in its production is a defect in the development of the fusion faculty, a process which normally occupies the first six years of life. The defect is frequently inherited, which accounts for the prevalence of squint in certain families. Hypermetropia is only a secondary factor, for a high degree has no influence in determining an early onset, while a great many children who squint have no more than the ordinary degree of hypermetropia. In cases where the fusion faculty is altogether wanting, as in many cases of alternating squint, no amount of training will effect a cure; but in those where it is only partially defective, and where systematic training is undertaken soon after the first onset of squint, the results in Worth's hands have been most encouraging. An interesting confirmation of his view is, that in the case of the younger brothers and sisters of children brought to him for squint, Worth was able to examine the fusion sense and follow up the subsequent history in 157 cases. In 106 he found the fusion faculty well developed. Not one of these squinted subsequently. Of 37 cases in which the note was "doubtful," 6 had since squinted, while of 14 cases in which his note said "fusion faculty very deficient," 8 had since developed constant squint.

With regard to the amblyopia which goes along with squint, it is.

says Worth, scarcely ever congenital in the sense of one eye being born with a capacity different from the other, but very nearly always it is the effect of disuse; a fact which can be confirmed by the very successful results of occluding, or even merely atropinizing, the sound eye, when undertaken before it is too late.

With regard to treatment, there are three objects to be kept constantly in view: (1) To *prevent deterioration* of the vision of the deviating eye, and to restore as far as possible, the sight of this eye, in cases in which amblyopia from disuse has already been allowed to occur; (2) To *train the fusion sense* at the earliest possible age; and (3) To *restore the visual axes* to their normal relative directions.

To attain these objects there are five therapeutic measures to be employed: (1) Optical correction of any refractive error; (2) Occlusion of the fixing eye; (3) Instillation of atropine into the fixing eye only; (4) Training the fusion sense; (5) Operation.

With regard to the first measure, no infant is too young to wear glasses; but in the case of infants they should be made with short, straight sides, with loops at the ends through which tapes can be passed to tie them on. The second measure is recommended for cases of young children in which the amblyopia of the squinting eye is already far advanced. The occlusion of the fixing eye should be continuous, and if it is going to do much good, one usually finds a very great improvement of vision in the squinting eye within a fortnight.

In the case of young children, when vision in the squinting eye is estimated to be equal to $\frac{6}{36}$ or better, atropine in the fixing eye is all that is required to cause the squinting eye to be used, and this is an exceedingly efficient curative measure. On the other hand, the too common practice of keeping both eyes under atropine for weeks or months together, is unhesitatingly condemned. For the actual training of the fusion sense, Worth has devised an instrument which he calls the **Amblyoscope.*** It is a stereoscope, the two tubes of which can be set at any angle. By means of simple pictures, such as a bird before one eye and a cage before the other, and by adjusting the illumination of the two pictures, he can generally elicit simultaneous vision of the two pictures, and having reached this stage, the further education in combining more difficult pictures is then generally only a matter of care and time. The favourable time for "fusion training" is between the ages of three and five years; after six years of age it is seldom worth while to attempt it.

It will be seen that the main reliance in the treatment of squint is set on *training and enforced use of the squinting eye.* Operative procedure is only employed to supplement these, in cases where they prove insufficient.

REFERENCES.—[1]*Lancet*, April 30, 1904; [2]*Ibid*, March 19, 1904; [3]*New York Med. Jour.* Nov. 21, 1903; [4]Recently pub. by Bale, Sons and Danielsson.

* This instrument is made by Mr. Hawes, Optician, 79, Leadenhall Street, E.C.

**VOMITING SICKNESS** (Of Jamaica). *J. W. W. Stephens, M.D.*

Under this title, Turton[1] describes a disease affecting children in country districts. The vomiting is followed by collapse, with irregular breathing and weak pulse. The temperature is not raised. Frothy mucus comes from the lips, and râles are heard over both lungs. Death may occur in a few hours. *Post-mortem*, there are signs of gastro-intestinal irritation, and *Ascarides* are usually present in large numbers. Stimulant treatment in the early stages generally ensures recovery.

REFERENCE.—[1]*Jour. Trop. Med.* June 1, 1904.

**VOMITING IN INFANCY.** (*See* GASTRO-INTESTINAL DISORDERS).

**VOMITING** (Post-Operative). *Priestley Leech, M.D., F.R.C.S.*

Bickle[1] recommends 15 grains of **Chloretone** two hours before the operation as a preventive of post-anæsthetic vomiting. The results have been very satisfactory; he has only had four failures, and these in three patients. [It seems worth a trial, and it has acted well in two or three cases where I have seen it adopted.—P.L.]

REFERENCE.—[1]*Ther. Gaz.* Oct. 1902.

**WHITLOW** (Gonorrhœal). *Priestley Leech, M.D., F.R.C.S.*

Meyer[1] reports the case of a young woman, aged twenty-two, who was admitted with gonorrhœal rheumatism in the foot, elbow, and ankle. This yielded to treatment, but the temperature kept up, and on the third day a blister was observed in the middle finger of the right hand; no lymphangitis. On opening it, a yellow fluid was let out, and gonococci were found in the pus. Other cases have been reported, but it is doubtful whether they were not metastatic in origin; in this case the patient remembered having wounded the finger. The wound took three and a half weeks to heal.

REFERENCE.—[1]*Forts. d. Med.* 1903, Bd. 21, p. 1185.

**YELLOW FEVER.** *J. W. W. Stephens, M.D.*

The Sanitary Department of St. Paul published in 1904[1] several experimental transmissions of yellow fever by means of infected *Stegomyia fasciata*.

1. On Dec. 24th, four specimens of *Stegomyia fasciata* were fed on a typical case of yellow fever On Jan. 12th (12.30 noon) a healthy patient allowed himself to be bitten by these. On Jan. 14th (evening) patient was indisposed. He shivered, and vomited three times before 10 p.m. Jan. 15th, still indisposed; temperature below 37°; at 4.45 p.m. headache, photophobia, horripilation, weakness of limbs, general pain, and pains in bone (rachialgie), T. 37·2° 11 p.m. T. 39·4°. Pulse 118. No albuminuria. Conjunctival hyperæmia marked. Characteristic congestion of the skin in the thoracic and clavicular region. Pain over the epigastrium. Treatment begun, and then gradual recovery.

2. Dec. 24th, three specimens of *Stegomyia fasciata* infected at the same time as those of the previous experiment. Jan. 13th (7 a.m.)

native of Rio-Janeiro bitten by these mosquitoes. This patient showed no symptoms of yellow fever at any time. It is thought possible that he had a natural immunity.

3. Four specimens of *Stegomyia fasciata* infected (? on what date). Jan. 20th (11 a.m.) a healthy patient bitten by these mosquitoes. Jan. 23rd (noon) indisposition ; 7.30 p.m. headache, T. 37·2°, the temperature then rose. Patient shivered. Suborbital pain. Pains in the limbs. 11 p.m. T. 38·2°. Pulse 120. Jan. 24th (1 p.m.) headache severe. Heaviness in the eyes. Epigastric tenderness marked, T. 39° in the evening. Jan. 26th, slight bleeding from the gums. Urine contains albumen, T. 39° in the evening. Jan. 27th (midnight) bilious vomiting. 9.30 a.m. bilious vomiting. Urine albuminous, T. 38°. Jan. 31st, convalescence begins.

4. Six mosquitoes infected from the same case as the last, one on the first day of the disease, five on the second day (? date). Jan. 20th (1 p.m.) patient bitten. Jan. 23rd (8 p.m.) some shivers and slight headache ; (10 p.m.) T. rose from normal 36° to 37·3°. Jan. 24th (1 a.m.) pain in the legs and stomach, and in bones. Burning sensation in the eyes. Intense hyperæmia of conjunctiva and of thorax. Temperature rose to 40° then fell to 38·6°. Pulse 102, then 86. Jan. 26th and 27th. Patient improving. No albuminuria.

The resulting infections were considered, in the three positive cases, to be typical yellow fever, though somewhat mild cases. It will be noticed that in cases 3 and 4, in which the mosquitoes bit at practically the same time (11 a.m. and 1 p.m. respectively) the signs of infection also became evident about the same time, *viz.*, the evening of the 23rd.

A number of experiments were also made to determine whether clothes and linen worn by yellow-fever patients could transmit infection. Three healthy persons were shut up in a chamber protected with wire gauze, and proved to be completely free from *Stegomyia fasciata*. They wore linen soiled with the vomit, urine, and fæces of yellow-fever patients. The experiment lasted from April 20th to May 1st. The "patients" all remained in excellent health. Accordingly, there is no foundation for the belief that fomites can convey yellow fever.

It may be noted that the protozoan organism in the diverticula of *Stegomyia* found by American observers, and believed by them to be the organism of yellow fever, is nothing but a common contamination of *Stegomyia*, and can be found commonly in that insect at all times. It has no connection with yellow fever. At present we are as far as ever from discovering the specific cause. Schaudinn suggests that the organism (a protozoon) may be found in the Malpighian tubes, and thinks that it may be invisible unless in an agglomeration of many individuals. He was led to make this suggestion from his remarkable work on the developmental cycle of trypanosomes and spirochætes in the mosquito *C. pipiens*.

REFERENCE.—[1]*Travaux Touchant la Prophylaxie de la Fièvre Jaune*, 1901-1903.

# *Part III.—Miscellaneous.*

## SANITARY SCIENCE, 1904,

By JOSEPH PRIESTLEY, B.A., M.D. D.P.H.,
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### BACTERIOLOGICAL EXAMINATION OF WATER.

A Committee, appointed by the Royal Institute of Public Health to consider the methods employed in the bacteriological examination or analysis of water, and if possible to draw up a scheme of uniform procedure for adoption in such examination, have reported during 1904 that, in their opinion, the *minimal* number of procedures should be :—

1. Enumeration of the bacteria present on a medium incubated at room temperature (18–22° C.).

2. Search for *bacillus coli*, and identification and enumeration of this organism, if present.

It is suggested that there should also be an enumeration of the bacteria present on a medium incubated at blood heat (36–38° C.), together with a search for (and enumeration of) *streptococci*. In special or exceptional instances search should be made for *bacillus enteritidis sporogenes*.

### FORMALIN AS A PRESERVATIVE.

Expert medical opinions differ as to the danger arising from the use of formalin as a preservative in milk and other articles of food, but the preponderance of evidence is to the effect that, in small doses, formalin retards all the digestive processes ; 1 part in 100,000 is stated to be a danger to health.

A form of dermatitis appears to have been caused at the Central London Sick Asylum at Hendon by the consumption of formalin-preserved milk (L.G.B. Report by Dr. Monckton Copeman).

### GAS STOVES AS A SOURCE OF DANGER.

No gas stove should be used in which there are no means provided for carrying off the fumes given off therefrom. The so-called self-condensing stoves (unprovided as they are with flues) are specially to be avoided, as pointed out in the recently published Memorandum of the Home Office as to the use of water-gas and other gases in factories. Poisoning by carbonic oxide (carbon monoxide CO), which is also a constituent (4 to 12 per cent) of ordinary coal gas, is the particular danger in regard to the use of water-gas and other gases in factories ; but the same danger, though to a lesser degree, is also present in the case of gas-irons in laundries, or defective gas fittings and gas stoves in work-rooms and living rooms, especially those stoves that are designed without any provision being made for the products of combustion being carried away by a flue or chimney.

The symptoms of carbonic oxide poisoning are given in the memorandum in detail, and it is pointed out that headache, anæmia, and defective nutrition may result from the long-continued breathing of the gas, even in amount too small to produce immediate effects, such as might occur from defective gas fittings and stoves in workrooms and living rooms. Penny-in-the-slot meters (gas), and gas cooking stoves (without flues) are also sources of illness amongst the working classes.

## MILK AND ITS DISTRIBUTION.

The first Food Adulteration Act was passed in 1872, followed by the Acts of 1875 and 1879, and the last Act of 1899. Endeavours have been made therefore to render free from adulteration all articles of foods and drugs, but the chief attention would appear to have been given, up to the present, to the securing of milk against specific adulteration, *e.g.* the addition of water, or the abstraction of cream (fat). Since, however, the introduction of bacteriological methods, it is found that germ-infected milks require attention too. So that a stage farther has been reached to-day, and it is felt that unwholesome and unclean (dirty) milk should not be allowed to be distributed. That such a decision was much needed will be allowed by all who know anything about the ordinary milk supplies. Indeed, the mystery is that such unclean and unwholesome milk should be drunk daily and hourly by the people. As an example of what is going on practically throughout England and Wales (and elsewhere), the results obtained during 1904 in the Borough (Metropolitan) of Lambeth are startling reading. Six samples of milk were taken under strict antiseptic precautions, and showed in each case a sediment, to a greater or lesser extent, of a brownish, greyish, whitish, or greenish colour, such sediments proving, on bacteriological examination, to consist of hairs, vegetable and cotton fibres, scales, bacteria, spores, etc. The bacteria present (on examination within quarter of an hour of the sample being taken) numbered, on an average, 1,700,000 to 5,200,000 per cc. (*i.e.* 15 drops), consisting of lactic acid bacteria, staphylococci, streptococci, sarcinæ, diplococci, micrococci, and bacilli coli, together with pus cells, epithelial scales, *débris*, etc. All these ingredients are derived from the dust and dirt that gain entrance into the milk in the course of its collection and delivery; the milk as it comes from the cow, or at least as it is secreted by the cow, being sterile. Further, it was found that of the bacteria present, 2 to 3 per cent caused gelatine to liquefy, *i.e.* were putrefactive; many were harmless (if not beneficial); the majority harmful; and of these last named some might have proved disease-producing or pathogenic, had the milk been drunk by susceptible persons.

It is interesting to trace the history of this dust and dirt, with the attendant germs or bacteria, which are to be found in most milk, such as we find it on the breakfast table. The milk is obtained from cows in the country farms (generally under insanitary conditions); carried in transit to towns (also at times under insanitary conditions); distributed to and stored by wholesale dealers or contractors (conditions still sometimes insanitary); sold to and stored by (*a*) retail dealers, and (*b*) customers (conditions equally, it may be, insanitary). The milk leaves the cow in the country at (say) 5 a.m., and reaches the ordinary customer, at the earliest on the evening of the same day, but more often on the following morning, *i.e.* twelve to twenty-four hours (or even more) after leaving the cow, and after having travelled, meanwhile, varying distances up to as much as 200 miles. Bearing these

simple facts in mind, it will be readily understood that milk collected under insanitary conditions, conveyed and stored under equally insanitary conditions, with an interval of 12 to 24 hours for bacterial growth to take place therein, must of necessity be unwholesome and unclean, and therefore dangerous to the health of those partaking of it, more especially infants and young children, invalids, etc. It is even stated that the first germs to get into the milk come from the inside (entrance) of the cow's own teats, and these rapidly multiply, and are added to by outside germs, which gain entrance into the milk also, and in their turn as rapidly multiply; milk, in its fluid form, being such a favourable medium for their rapid development, and suffering thereby proportionately in nutritive value, and containing the waste products (more or less poisonous) of such germs.

How is such an undesirable state of affairs to be prevented? First and foremost, the farm. A high standard of sanitation is required there, such as can only be obtained by a rigorous and careful carrying out of the Dairies, Cowsheds and Milk Shops Orders of 1885, 1886 and 1899. What do we find? That such Orders are, at least in the majority of districts, a dead letter—the result of the Local Government Board and the Board of Agriculture and Fisheries not insisting upon all Sanitary Authorities carrying them out efficiently. Even in London the Local Government Board itself has not carried out its own statutory duties as laid down in s. 28 of the Public Health (London) Act, 1891, by virtue of which the Board may make such general and special Orders as the Board may think fit, dealing with the registration of dairymen, the inspection of cattle in dairies, sanitary conditions of dairies, the securing of the cleanliness of milk vessels, the prescribing of precautions to be taken for the protecting of milk against infection or contamination, and the authorizing of the London County Council to make bye-laws for any or all of the above purposes. As far as London is concerned, the existing orders and bye-laws are twenty years behind the times!

Means of transit for the milk, and its methods of distribution, by rail to towns from the country, are equally unsatisfactory. Proper and suitable milk-vans (ventilated, cool, etc.) with locked or sealed churns are required, and greater quickness of transit is needed. *Minimum* heat, *minimum* motion, and *minimum* time are essential.

After arrival by rail, the subsequent handling and storage by dealers (wholesale and retail), and by customers, require the very greatest care, so as to protect the milk from contamination (or further contamination) by dust and dirt. Small shops dealing in small quantities of milk store it in pans and cans on the counters, such vessels being uncovered, and the milk consequently exposed to dust, dirt, and flies, not to mention the fumes of the neighbouring kerosene (or paraffin) oils, bacon, soap, disinfectants, etc.

The same remarks apply also to private houses wherein milk is stored previous to its consumption, often under insanitary conditions.

The preventive measures suggested are comparatively simple, and may be summed up in the two words "greater cleanliness;" but before they will be used, the farmers and dealers in milk, as well as the consumers, will require to be more educated in the need and reason for such measures. Let the public demand pure, wholesome, and clean milk, and such will be forthcoming. The existing apathy of consumers is marvellous! The decision given in the King's Bench Division on Nov. 2nd, 1904, against the Aylesbury Dairy Company, mulcting them in damages to the extent of £106 for medical attendance

upon a lady residing at Ealing, who, it is alleged, caught typhoid fever from infected milk obtained from the defendant company, and died, will, it is hoped, draw attention to the need that exists for reform in regard to our milk supplies. The judge, in summing up, stated that the surroundings under which the cows at the particular farm, which was admitted in evidence to be typhoid-infected, were milked, were incredible ; and it was from such a farm that milk was supplied by the company to the deceased and her household. Certain infectious diseases may be spread through milk, and reference to the records will show that 330 outbreaks have been already traced to such a source, *viz.* 195 typhoid (enteric) fever, 100 scarlet fever, and 35 diphtheria and sore throats. These facts should ever be borne in mind, and whilst our milk supply is such as it is at present, the precaution should be taken of boiling, pasteurizing, or sterilizing all milk before it is consumed. Even the small amount of extra trouble involved in simply boiling milk in a household prevents it being done, except in rare instances. Speaking generally, it may be stated that the using of preservatives in milk is to be avoided, though expert opinion varies as to the *actual* danger to health of such a process. By some it is held to be an absolute necessity under existing conditions, so as to enable some sort of limit to be put to the rapid multiplication of germs, which is continually taking place in milk from the time it is drawn from the cow to the moment that it is being consumed.

Two methods of dealing with milk have been much in evidence during 1904, *viz.* (1) Drying of milk, so as to form a powder (the Just-Hatmaker process introduced into England by the Galak Milk Products Company, of 118, Fenchurch Street, London) ; and (2) Treating of milk with oxygen and carbonic acid (the aerated preserved milk process introduced into England by the Aerated Cream and Dairy Company of 52, Bedford Row, London). Both these methods appear satisfactory, bacteriologically and otherwise—the powder, in the former case, being stated to be sterilized by the temperature of 240° F., at which it is produced, as is the mixture in the latter case both by the oxygen and carbonic acid pumped into it, and by the pressure to which the milk is subjected.

## SCHOOL HYGIENE.

The First International Congress of School Hygiene was held during 1904 at Nuremberg, under the patronage of H.R.H. Prince Ludwig Ferdinand of Bavaria. The object of the Congress was to direct the attention of existing authorities to the importance of, and the practical means of attaining the most perfect results in, the physical and mental well-being of children ; to direct attention to the hygiene of the teachers themselves ; and lastly, to give an opportunity, to those specially interested in such well-being of the young, to study and to appreciate the means whereby this object can best be attained.

Special attention was given during the Congress to the ophthalmic troubles of children, and the proposition was laid down that " myopia might be fairly regarded as a widespread disease of children produced by school life," the result of much close work (especially in association with hereditary disposition), and bad lighting, not to mention badly-constructed desks, etc. As a natural corollary the need for an ophthalmologist being attached to each school was insisted upon.

Overpressure, too, in more advanced classes came in for much blame, and it was also laid down that " no lessons should be given in the afternoons, so that children might have ample opportunities for

bodily exercises and games" ; and "that home lessons were to be limited."

Other matters that specially engaged the attention of the Congress were : (1) The need for a systematic and regular inspection of the teeth in children ; (2) The necessity for special classes for backward or defective children, and for compulsory swimming classes.

The Incorporated Society of Medical Officers of Health have petitioned the Board of Education, during 1904, in favour of domestic hygiene, personal hygiene, and physical training forming a compulsory part of the training of elementary school teachers, and being also compulsory subjects in all elementary schools. That such action is necessary will be admitted when the profound ignorance of people in all ranks of life, concerning what ought to be common knowledge of the hygienic laws, is remembered. Think of the deplorable ignorance amongst mothers as to the rearing and feeding of young infants and children, and the resultant mortality and physical deterioration. Education of the people in the simple laws of health is what is needed, and we must begin with the infants and children in schools (the future fathers and mothers of the coming generations) under compulsory education. Why should not England follow in the lead of Prussia, in which country pupils are taught something of the health laws, the teaching being regulated according to the different ages of the pupils ? or of Norway and Sweden and Denmark, where hygiene forms a part of all school teaching ?

**SEWAGE AND SHELL-FISH.**

The 4th Report of the Royal Commission on Sewage Treatment and Disposal has been published during 1904, dealing almost exclusively with the pollution of tidal waters, with special reference to the contamination of shell-fish, and proposing as a remedy the creation of River Boards with control over estuaries and tidal waters. These Boards are to have full powers : (1) To deal with sewage purification and sewage outfalls ; and (2) To prohibit and close areas as unsuitable for shell-fish. It is suggested that an appeal authority should also be constituted.

**SMALL-POX AND VACCINATION.**

An important Report has been published by the Local Government Board during 1904, dealing with the "facts" in regard to Germany and her compulsory re-vaccination and her treatment by isolation of small-pox. The Report is written by Dr. R. Bruce Low, Medical Inspector of the Board, after personally visiting ten of the principal towns in Germany and conferring with the physicians of the hospitals there, inspecting the accommodation provided for small-pox patients, and, in addition, gaining detailed information from the Central Imperial Health Office at Berlin on the same subject. Conflicting statements have been made from time to time as to the methods adopted in Germany for dealing with small-pox patients, and it is interesting now to be able to put forward officially, and therefore authoritatively, the facts. In Germany a person suffering from small-pox, or *suspected* to be suffering from small-pox, can be ordered to hospital for isolation, if such person cannot, in the opinion of the Medical Adviser of the local Sanitary Authority concerned, be isolated at home ; and in any case all "contacts" in the house infected are immediately vaccinated or re-vaccinated. The small-pox cases are isolated on the sites of the general hospitals in the small-pox pavilions,

without apparently any untoward results to the other inmates of the closely-contiguous general hospital wards—a condition of things attributed by all to the protection that is conferred upon the population by statutory vaccination and re-vaccination, "without which," the writer of the Report remarks, "the German method would, it is unanimously admitted, break down." It is thus seen that there is no strict system of isolation of small-pox in Germany, which depends for her protection against the disease practically entirely upon compulsory vaccination and re-vaccination. Indeed, isolation is comparatively rarely required, and there is no need to provide for small-pox on a separate site with separate administration. Germany is freed from great expense, not to speak of the suffering and inconvenience which fall upon the English nation. Small-pox is generally introduced into Germany by foreigners, or by German subjects returning from foreign countries.

The official figures are worth quoting: During the 12 years 1891–1902 inclusive, in Germany (with a population of 56,367,178 persons) there were recorded 607 deaths from small-pox, whilst in England and Wales (with a population of 32,526,075 persons), during the same period of 12 years, there were recorded 6,761 deaths from small-pox; or, in other words, *the small-pox mortality in Germany (with efficiently enforced vaccination) is about twenty times less than in England and Wales (without efficiently enforced vaccination)*. Truth is at last out, and the Revaccination Bill for Britain, when re-introduced, may have a better chance of passing into law. Let us hope so. Bearing on the subject of the danger of a small-pox hospital to the surrounding community, an important case came before the High Court (the Attorney-General *v.* the Mayor and Corporation of Nottingham) in Feb. 1904, Mr. Justice Farwell presiding, but no opinion was expressed by the Court as to the truth, or otherwise, of the so-called aerial convection of small-pox. The expert evidence was equally balanced *for* and *against*, and the judge declined to weigh the one against the other, but stated that legally what is required is "complete and unbroken proof of universal and unfailing danger where infection with disease is concerned." What would become of most of the preventive measures of sanitary science if such proof were required in all cases? His lordship spoke, in his judgment, in no uncertain voice as to the immunity derived from vaccination and re-vaccination, and stated that, consequently, "in applying the maxim *sic utere tuo ut alienum non lædas*, the duty of reasonable precaution for one's own protection is not to be ignored." The verdict was given in favour of the Mayor and Corporation of Nottingham, and the question as to the actual danger of a small-pox hospital remains legally undecided (*see* LEGAL DECISIONS).

## SMALL-POX AND VAGRANTS.

An important Conference was held at the end of 1904, consisting of representatives of Sanitary Authorities throughout England and Wales, to consider the agency of vagrants in the spread of infectious diseases (especially small-pox), and the preventive and remedial measures to be adopted in connection therewith. Many different resolutions were passed, in which compulsory re-vaccination figures largely, and also other stringent methods dealing with the giving of information (correct) to the officers of sanitary authorities, the transference of the Poor Law vaccination functions to Sanitary Authorities, the establishment of labour and intelligence bureaus throughout the country, the want of greater control over the inmates of common lodging-houses, etc., etc.

## STANDARDIZATION OF DISINFECTANTS.

The importance of some legal standard of disinfectants being adopted will be appreciated, when it is remembered that about 90 per cent of the disinfectants (so-called) are really not disinfectants in the true sense of the term, *i.e.* are not germicides, and do not therefore kill the germs and their spores and toxins. They are simply deodorants or antiseptics, and sometimes not even that! A feeling of false security is the result.

Dr. Rideal and Mr. Ainslie Walker, realizing these facts, and bearing in mind the complicated nature of the operation of true disinfection, suggest the need for disinfectants being guaranteed, and their efficiencies determined. It is, they say, obvious that a bacterial, rather than a chemical standard is wanted, as it is well known that the strength of a disinfectant (as determined chemically) has, in many instances, no corresponding ratio to its germicidal power. Take for instance cyllin (the newly-named disinfectant), which is shown by Klein recently to kill the germ of plague (*Bacillus pestis*), at least in watery emulsion, in ten minutes, in a strength of 1-2400, whereas absolute phenol requires to be in a strength of 1-80 to effect the same result in the same time. In other words, cyllin has a disinfecting strength thirty times as great as absolute phenol, and therefore cannot depend for such a result upon the carbolic acid (or its homologues) that it contains, but must depend upon some other (unknown at present) substance or power.

At present there is practically no official control over the sale of disinfectants, with the exception of that set forth in the Privy Council Orders of July 27th, 1900, and June 5th, 1902 (dealing with (*a*) more than 3 per cent of carbolic acid, or its homologues, and (*b*) corrosive sublimate). Dr. Rideal and Mr. Ainslie Walker recommend pure phenol as the standard, but it would appear that no one standard is to be expected to be sufficient to test all the diverse properties of different disinfectants. The whole question of what the nature of the standard is to be, whether phenol or corrosive sublimate acid solution, or something else, is a difficult one, but will probably be shortly settled by the Expert Committee which has been already appointed, consisting of Prof. Sims Woodhead, Prof. Hunter Stewart, Dr. Andrewes, and Col. Firth.

## UNDERGROUND BAKEHOUSES.

Section 101 of the Factory and Workshop Act, 1901, is now in full force, and no underground bakehouse can be used as such unless previously certified as suitable in construction, light, ventilation, and in all other respects. A very large amount of work has been carried out throughout the country dealing with structural (and other) alterations and improvements in connection with underground bakehouses, whereby such have been much improved in regard to lighting, ventilation, cubic capacity, and other details. It must be remembered in this connection that no underground bakehouse can be used at all as such, unless so used (temporarily or otherwise) at the time of the passing of the Act (*i.e.* Aug. 17th, 1901); a similar provision to that laid down in s. 27 of the Factory and Workshop Act, 1895, whereby no new underground bakehouse could be opened after Jan. 1st, 1896. An endeavour has been made in Bradford during 1904 to contract out of the Act of 1901, on the ground that if an underground bakehouse was in use as such prior to the passing of the 1895 Act, no certificate under the 1901 Act was required, and the stipendiary magistrate of Bradford

decided in favour of that view of the law. Fortunately, the magistrate's decision has been upset on appeal on July 12th, 1904, before the Lord Chief Justice and Justices Kennedy and Phillimore, the King's Bench Division Court laying down that "no class of underground bakehouse could be omitted from the operation of s. 101 of the 1901 Act" (*see* LEGAL DECISIONS).

## VENTILATION STANDARDS FOR FACTORIES AND WORKSHOPS.

In 1902, a Departmental Committee reported that "a maximum limit of 12 volumes of carbonic acid gas (of course as an index of organic impurity) by day, and 20 volumes by night, per 10,000 of air, with gas burning, should be established as the legalized ventilation standards for all factories and workshops." Against this Report protests arose on all sides. Thus the Medical Officers' Society memorialized the Home Secretary, stating that to legalize such a standard would be a retrograde step, and asking that 9 volumes per 10,000 should be regarded as the maxiumm $CO_2$ impurity allowed in all workplaces, as is at present the case in all artificially humidified factories by order of the Home Secretary made, 1900, under the Cotton Cloth Factories Acts; such a standard, in artificially humidified factories, having worked, and still working exceedingly well, so well, in fact, that a similar standard has been reintroduced in the new Factory and Workshop Act, 1901, s. 94. The Departmental Committee's Report of 1902 was drawn up by Dr. Haldane, F.R.S., who in view of the protests against the report received by the Home Office, raised the question again at the British Medical Association's Annual Meeting, held at Oxford in July, 1904, by stating categorically his reasons as follows :—

1. Dusts of various kinds and pathogenic organisms in the air breathed are of more importance than the mere presence of $CO_2$, or of volatile organic matter.

2. $CO_2$, even to the extent of 50 vols. per 10,000, is harmless, if not something to the good in most cases.

3. Organic matter of the breath is much less poisonous than it has hitherto been supposed to be.

4. Schoolmasters and teachers have a low phthisis rate, though they have to spend their working hours in rooms the air of which is very much vitiated by respiration.

5. A 9-volume standard will prove too stringent.

The evil results from ill-ventilated rooms are well known amongst both the employers and the employees, *e.g.* nausea, headache, anæmia, general malaise, etc.; whilst the statistics of the Registrar-General, if properly examined, will show that even death may result directly, or indirectly, despite these *ex cathedra* statements of Dr. Haldane. Air polluted by respiration is undoubtedly injurious when re-breathed, irrespective of any proofs that may be forthcoming to show that, from laboratory experiments, $CO_2$, and even organic matter are free from danger (as stated in propositions 2 and 3 above). Ill-ventilated and over-crowded rooms predispose to phthisis. It is worthy of note that an order has been issued during 1904 by the Secretary of State for the Home Department, modifying the present standard of cubic space in bakehouses from 250 c. ft. to 500 c. ft. per person in underground, and to 400 c. ft. per person in all other bakehouses (*i.e.* overground), wherein work is carried on by artificial light other than electric light. This order has been made as the result of a petition from the Society of Medical Officers of Health.

# LEGAL DECISIONS

## AFFECTING MEDICAL MEN AND THE PUBLIC HEALTH.

By JOSEPH PRIESTLEY, B.A., M.D., D.P.H.,

*Medical Officer of Health, Lambeth, London.*

### ADULTERATION OF FOOD AND DRUGS.

FARTHING *v.* PARKINSON (Appeal Court).

*Sale of Food and Drugs Acts—Defence of Warranty—Notice to be given under Section* 20 *in the form of copy (whole or part) of the Warranty or Invoice.*

The case was one of butter containing 2·75 per cent of water over and above the standard fixed by the Board of Agriculture (Sale of Butter Regulations, 1902), and a warranty was produced which was not an exact copy of the warranty as given with the butter when purchased, in that it did not set out all the details mentioned in the original warranty, and in that an addition had been made to the original invoice (and signed) by the vendor. The magistrate convicted the retail dealer, holding that proper notice as required under s. 20 of the Sale of Food and Drugs Act, 1899, had not been given under the facts as set out. The defendant appealed.

*Held*, That the notice of the defence of warranty required by s. 20 of the Sale of Food and Drugs Act, 1899, must be accompanied by a copy of the warranty or invoice relied upon, but that a copy of that portion of the warranty or invoice dealing with the particular case only need be sent, accompanied even with additions or omissions (or both) that are irrelevant to such particular case, it being understood that, in any case, the notice is sent *bona fides*. *Appeal allowed.*

WILSON AND MCPHEE *v.* WILSON

(High Court of Justiciary of Scotland).

*Sale of Food and Drugs Act*, 1875, s. 6—*Brandy—Standard—Proof of Adulteration—Prejudice.*

The brandy purchased proved, on analysis, to be not a distillation only from wine or grapes, but to consist of 65 per cent of spirit derived from other sources, *e.g.* grain and beetroot. The brandy was not, therefore, of the nature, substance and quality demanded. The sheriff substitute convicted, but stated a case for the consideration of the Court of Justiciary, which confirmed the conviction.

*Held*, That, where no standard is fixed for an article, the Court is entitled, on the evidence, to determine what is the true standard; and that brandy containing a large proportion of either grain or beetroot spirit, and not being a distillation of wine or grape spirit, is not brandy.

N.B.—A similar case has been decided in England before a magistrate (Islington Borough Council *v.* Hillyer), in which it was held that brandy containing 60 per cent of spirit derived from a source other than the grape, was not of the nature, quality and substance demanded by the purchaser. The defendant was fined £5 together with £50 costs, or, in default of distress, one month's imprisonment.

HENNEN *v.* LONG (King's Bench Division).

*Sale of Food and Drugs Acts, 1875 to 1899—Milk—Warranty—Addition of Preservatives after Warranty had been given.*

In this case the milk contained added water, to the extent of 5·2 per cent below the limit fixed by the Board of Agriculture, and also boric acid preparation as a preservative. The retail dealer gave notice of a warranty (given by the vendor) under s. 25 of the 1875 Act, and, though it was admitted that the boric acid preparation had been added by the retail dealer, the summons was dismissed against him by the justices, and a case stated for the High Courts.

*Held*, That the addition of the boric acid preparation as a preservative by the retail dealer destroyed, and rendered invalid, the warranty of the vendor—the milk not being retailed in the exact same state and condition in which it was when originally purchased by the vendor.

*Appeal allowed.*

BEARDSLEY *v.* GIDDINGS (Appeal Court).

*Sale of Food and Drugs Acts, 1875 to 1899—Milk—Time for instituting proceedings—Time of Summons—Delay of Service.*

This was a case in which the summons was not served (though taken out) before the expiration of 28 days from the time of purchase of the sample (milk) as required by s. 19 (i) of the Sale of Food and Drugs Act, 1899, which states that "any prosecution shall not be instituted after the expiration of 28 days from the time of purchase." The magistrate dismissed the summons on the ground that the time limit had been exceeded, and this decision was appealed against and the appeal upheld.

*Held*, That the provision in s. 19 (i) of the Sale of Food and Drugs Act, 1899, is complied with, if the summons is issued within 28 days from the time of purchase of the article, although it may not be served until later.

*Appeal allowed.*

**BYELAWS (Validity of).**

NOKES AND NOKES *v.* MAYOR, ETC., OF ISLINGTON,

STILES *v.* GALINSKI,

NOKES AND NOKES *v.* MAYOR, ETC., OF ISLINGTON

(Appeal Court).

*Public Health (London) Act, 1891—Byelaws—Validity—Water-closets, Cleansing of Houses let in Lodgings—Notice to owner.*

This group of cases is noteworthy as deciding an important point connected with byelaws, *viz.* that where such a byelaw requires certain acts to be done (*e.g.* provision of 1 w.c. to every 12 persons in a lodging-house, and the annual cleansing of rooms, staircases, and passages in a lodging-house in the first week of the month of April in each year), and imposes a penalty for breach thereof, it is invalid if it does not also provide for notice being given of the alleged breach to the person liable, especially when such person liable is not the person actually committing the breach. Summonses were taken out against the owners of certain lodging-houses for breaches of byelaws under ss. 39 and 94 respectively of the Public Health (London) Act, 1891, and the magistrate convicted in every case, holding that the byelaw was valid.

*Held*, That the byelaw in each case was invalid, in that it did not provide for notice being served upon the person complained against.

*Appeal allowed.*

**BYELAWS (Application to old or existing Buildings).**

METROPOLITAN INDUSTRIAL DWELLINGS CO. *v.* LONG.

*Metropolis Management Act*, 1855, s. 202—*Byelaws as to Drainage and Water-closets—Application to Old or existing Buildings as apart from New Buildings.*

Broken w.c. pans and traps were replaced, and this work was regarded by the Sanitary Authority as a "reconstruction," so that the traps were required to be provided with antisyphonage pipes as per number 17 of the L.C.C. Byelaws, which, by Byelaw 21, are made applicable to new work in old or existing buildings as far as practicable. The magistrate convicted the owners, who appealed successfully against the decision.

*Held*, That a byelaw to be valid must be clear, and in plain language; and that, under the L.C.C. Byelaw, the "repair" of the broken pan or trap is not a "reconstruction" of the same. *Appeal allowed.*

**BYELAWS (Interpretation of).**

TREASURE & SON *v.* BERMONDSEY BOROUGH COUNCIL.

*Metropolis Management Act*, 1855—*L.C.C. Byelaws for Drainage—Pipe from Lavatory.*

Number 10 of the L.C.C. Byelaws requires each waste pipe to be undertrapped immediately beneath the lavatory, but the London School Board constructed 9 basins, each basin having a short length of lead pipe leading into an open trough—the trough itself being trapped outside. The magistrate held that each basin was a lavatory, and, therefore, required undertrapping, but against this decision there was an appeal, which was allowed.

*Held*, That the 9 basins together formed one lavatory, and that the trap outside was a sufficient trap to comply with the byelaw.

*Appeal allowed.*

**DENTIST (Unregistered).**

PANHAUS *v.* BROWN (King's Bench Division).

*Dentists' Act*, 1878, s. 3—*Unregistered person using the title of Dentist—One-man Company.*

A person started a dental establishment called "German Dental Institute, West-Central Dental Institute, Limited," and was himself unqualified, being neither a registered medical practitioner nor a registered dentist under the Dentists Act, 1878. He was convicted by the magistrate, and appealed against the decision.

*Held*, That he was rightly convicted. *Appeal dismissed.*

**DRAIN v. SEWER.**

JACKSON *v.* WIMBLEDON URBAN DISTRICT COUNCIL (King's Bench Division).

*Public Health Act*, 1875, s. 41, *and Public Health Acts Amendment Act*, 1890, s. 19—*Drain or Sewer—Private Drain leading into Private Drain.*

A pipe laid in private ground takes the drainage of several terrace houses belonging to one and the same owner, and then enters into another pipe receiving the drainage of several other houses belonging to another separate owner. This latter drain drained into the public sewer. Had all the houses belonged to one and the same owner, the main drain would have been legally a "sewer" by s. 19 of the Public

Health Acts Amendment Act, 1890, but the houses belonged to two separate owners, so that it was held by the justices to be a "drain." On appeal this decision was reversed.

*Held*, That the fact that the pipe discharged into a private drain did not prevent it from being a sewer, which it undoubtedly would have been had it discharged into a public sewer (all the houses belonging to one and the same owner). *Appeal allowed.*

THOMPSON *v.* ECCLES CORPORATION.

*Public Health Act*, 1875, s. 41, *and the Public Health Acts Amendment Act*, 1890, s. 19—*Drain or Sewer—Private Drain leading into Private Drain.*

The facts were similar to those related in the previous case (Jackson *v.* Wimbledon Urban District Council), and the Divisional Court reversed the decision of the justices.

*Held*, That the Court was not bound by previous decisions of Bradford *v.* Eastbourne Corporation (1896), and Self *v.* Hove Commissioners (1895), but that, in this case, the pipe made on private land, and draining two or more houses belonging to different owners into a public sewer, is a sewer and not a drain, in accordance with the decision given in Hill *v.* Hair (1895).

Against this decision of the High Court the Sanitary Authority appealed, and the appeal was allowed.

*Held*, That the case was governed by Bradford *v.* Eastbourne Corporation (1896). *Appeal allowed.*

**INFECTIOUS HOSPITALS (Damage from).**

WRIGHT *v.* THE MANAGERS OF THE METROPOLITAN ASYLUMS BOARD (King's Bench Division).

*Negligence—Infectious Disease—Patient discharged from Hospital before being free from Infection—Liability of Hospital Authorities.*

A patient, suffering from scarlet fever, was removed to hospital on March 29th, and was discharged on May 9th without complications. His mother sickened on May 16th, and his brother on May 19th. Slight peeling was noticed on the hands and feet of the first patient when he returned home, but this peeling was no evidence of infection according to the evidence (and opinion) of the Medical Officer of Health.

*Held*, That there was no negligence under the facts as stated above. *Judgment for defendants.*

**LANDLORD AND TENANT.**

STOCKDALE *v.* ASCHERBERG (Appeal Court).

*Public Health Act*, 1875—*Liability of tenant to abate a nuisance arising from defective drains (by reconstructing them) on account of a covenant to pay all "outgoings."*

This was a three years' agreement, the tenant covenanting to pay "all taxes, rates, assessments, and outgoings of every description." A notice was served under the Public Health Act, 1875, to remedy defective drains, and the owner did the work at a cost of £83 10s., and brought an action to recover the amount from the tenant in the King's Bench Division, and was successful. An appeal against Justice Wright's decision was entered, but the appeal was dismissed.

*Held*, That the word "outgoings" includes the reconstruction of drains under an order of a Sanitary Authority, even though the premises are only taken on a three years' agreement. *Appeal dismissed.*

HARRIS AND ANOTHER *v.* HICKMAN (King's Bench Division).

*Public Health (London) Act*, 1891, ss. 3, 4—*Landlord and Tenant—3 years' Agreement and tenant holding over without new Agreement—Outgoings—Intimation notice is voluntary.*

A three years' agreement was up, and the tenant kept on the house afterwards as a yearly tenant. The drains were condemned, and an intimation notice was served under s. 3 of the Public Health (London) Act, 1891, under which the work was done to the value of £70 1s. 6d. No statutory notice was served on the owner. There was a covenant in the three years' agreement to pay "all outgoings."

*Held*, That the intimation notice having alone been served, the work done is voluntary and not under compulsion, and therefore the cost cannot be recovered, as it could have been otherwise, on the ground that the liability for the work was "outgoings"; and, further, that the three years' agreement having expired, the tenant was a yearly tenant and could not therefore be held to be responsible for such an onerous obligation as the carrying out of structural sanitary repairs.

*Judgment for defendant.*

**MEDICAL OFFICER OF HEALTH (Scope of Authority).**

KNOTTINGLEY URBAN DISTRICT COUNCIL *v.* GARLICK (King's Bench Division).

*Public Health Act*, 1875, ss. 121, 308—*Medical Officer of Health—Scope of authority—Destruction of Bedding and other infected articles.*

*Held*, That a Medical Officer of Health, duly appointed under the Public Health Act, 1875, is not acting within the scope of his authority in destroying articles which are infected, without special direction of his Authority, or without subsequent ratification of his action by such Authority.

N.B.—In another case (FOSTER *v.* EAST WESTMORELAND RURAL DISTRICT COUNCIL), heard in the Penrith County Court, it was *held* that the absence of the Medical Officer's certificate, and of the written notice, provided for by s. 120 of the Public Health Act, 1875, is immaterial, if the owner of "goods" assents to the Authority's proceedings, under which disinfection of such goods is carried out and damage done thereto. Compensation to be allowed.

*Judgment for plaintiff.*

**MEDICAL PRACTITIONER (Mistaken Diagnosis).**

SALISBURY *v.* GOULD.

*Public Authorities Protection Act*, 1893, s. 1—*Infectious disease—Mistaken diagnosis and notification by Medical Practitioner—Limitation of action for damages.*

A patient was removed to a small-pox hospital when suffering from chicken-pox (diagnosed small-pox, the diagnosis being confirmed by the Medical Officer of Health), and damages were claimed afterwards against the medical attendant.

*Semble*, That a medical practitioner in private practice, notifying a case of infectious disease (wrongly diagnosed), is within the scope of the Public Authorities Protection Act, 1893; and that, even if he has been guilty of negligence in giving such a notification, any action for damages must be commenced within six months from the date of the offence. *Action dismissed.*

**NUISANCE** (Order to abate).

WING *v.* EPSOM URBAN DISTRICT COUNCIL
(King's Bench Division).

*Public Health Act*, 1875, s. 96—*Nuisance—Order to abate—Signature of order.*

A court of summary jurisdiction made an order to abate a nuisance by reconstructing certain defective drains, and the order was signed by one justice only. An appeal to Quarter Sessions resulted in the order being held valid, but a case being stated for the opinion of the High Court, the High Court decided that the order was invalid.

*Held*, That an order of a court of summary jurisdiction, requiring an owner to abate a nuisance from defective drains under s. 96 of the Public Health Act, 1875, must be signed by two justices, as required by Form C. in Schedule iv. of the Act. *Appeal allowed.*

**SMALL-POX HOSPITALS** (Dangers of).

ATTORNEY-GENERAL *v.* MAYOR, ETC. OF NOTTINGHAM
(Chancery Division).

*Held*, That an injunction could not be granted to restrain the use of premises as a small-pox hospital unless it is shown that the probability of a nuisance is so great as almost to amount to a moral certainty; evidence of infection caused by other such hospitals not being sufficient proof. *Verdict for defendants.*

**SMOKE NUISANCE.**

TOUGH *v.* HOPKINS.

*Public Health* (*London*) *Act*, 1891, ss. 23, 24—*Nuisance—Black Smoke—Funnel of Tug on River.*

Black smoke was found to be proceeding from the funnel of a tug, plying on the Thames—the result of careless and irregular stoking. It was contended that s. 24 did not apply to a tug, but the magistrate convicted, holding that the funnel of a tug was a chimney under s. 24 (*b*), and, further, the magistrate refused to specify the works to be executed to prevent the recurrence of the nuisance on the ground that the nuisance arose simply from bad stoking. The Appeal against the magistrate's decision was dismissed.

*Held*, That the funnel of a tug was a chimney under s. 24 (*b*) of the Public Health (London) Act, 1891, and that it was unnecessary to state the works to be executed (the nuisance being the result simply of bad or irregular stoking). *Appeal dismissed.*

CENTRAL LONDON RAILWAY CO. *v.* HAMMERSMITH BOROUGH COUNCIL
(King's Bench Division).

*Public Health* (*London*) *Act*, 1891, ss. 4, 5—*Smoke nuisance—Form of prohibition order—Specification of works—Evidence.*

Nuisance from smoke from an electrical generating station was proved, due (it was stated) to two furnace doors being open at once, and the magistrate, in making a prohibition order, was asked to specify the works to be executed, and for that purpose decided to call further evidence, though the case was closed. Against this action of the magistrate the appellants appealed, and the appeal was dismissed.

*Held*, That when a magistrate, on making a prohibition order, is

asked to specify works, no objection can lie to evidence being heard as to what works are necessary; and even if no evidence be given, the magistrate may, or may not, as he thinks fit, give directions.

*Appeal dismissed.*

McNair *v.* Baker (King's Bench Division).

*Public Health (London) Act*, 1891, s. 24 (*b*)—*Nuisance—Black Smoke—Chimney of Club—Not a "Private dwelling-house."*

Magistrate refused to convict on the ground that the chimney of a club (used for the residence of some 700 members) was the chimney of a "private dwelling-house," and was, therefore, exempt from s. 24 (*b*).

*Held*, That the chimney of the club is not a chimney of a private dwelling house. *Appeal allowed.*

**UNDERGROUND BAKEHOUSES.**

Evans *v.* Gallon & Son (Appeal Court).

*Factory and Workshop Act*, 1901, s. 101—*Certificate of Suitability required for every Underground Bakehouse.*

This was an Appeal against the decision of the Bradford stipendiary magistrate, who ruled that if an underground bakehouse was in use as such prior to the passing of the 1895 Factory and Workshops Act, no certificate was necessary under s. 101 of the Factory and Workshops Act, 1901. This decision was based upon s. 27 of the 1895 Act, whereby no new bakehouse (underground) could be opened as such after Jan. 1st, 1896—old underground bakehouses (*i.e.* those in occupation previous to the passing of the Act) being, by inference, legalized.

*Held*, That no class of underground bakehouse could be omitted from the operation of s. 101 of the Factory and Workshop Act, 1901, but that a certificate of suitability from the Sanitary Authority is needed in each individual case. *Appeal allowed.*

Morris *v.* Beal.

*Factory and Workshop Act*, 1901, s. 101—*Underground bakehouse—Structural alterations—Covenant to pay "outgoings"—Jurisdiction of Magistrate—Lease nearly expired.*

Structural alterations had to be carried out in connection with an underground bakehouse before it could be certified by the Sanitary Authority as suitable, and the total cost (paid by the tenant) was £133 17s. 6d. There was a lease for twenty-one years, from Dec. 25th, 1885, with a covenant by the lessee to pay "all existing and future taxes, rates, assessments and outgoings, whether parliamentary, parochial, or otherwise, for the time being payable either by the landlord or tenant in respect of the said premises, except landlord's property tax." The tenant applied to the magistrate to apportion the cost between himself and the owner under sub-s. 8 of s. 101 of the Factory and Workshop Act, 1901, and the magistrate decided that, having regard to the fact that the lease had nearly expired, and that consequently the benefits arising from such alterations would be reaped chiefly by the owner, £70 out of the total amount should be paid by such owner, under the sub-section mentioned above, which contains the words "regard being had to the terms of any contract between the lessor and lessee."

*Held*, That the magistrate had no jurisdiction under sub-s. 8 of s. 101 of the Factory and Workshop Act, 1901, to determine what is just

and equitable in cases where there is, in the lease, an express covenant by the tenant to pay all "outgoings," such covenant to be construed without regard to the date at which it was entered into.

*Appeal allowed.*

N.B.—A similar decision had been given a few months previously by the Appeal Court in the case of GOLDSTEIN *v.* HOLLINGSWORTH (Stepney Borough Council). The lease in this case was for twenty-one years, but had just been granted (*viz.* March, 1903), and contained a clause by which the lessee covenanted to pay all "out-goings." The magistrate decided that this covenant extended to all expenses incurred under s. 101 of the Factory and Workshop Act, 1901, by the tenant—such expenses arising out of structural alterations ordered by the Stepney Borough Council before granting a certificate of suitability to the tenant. The magistrate's decision was upheld by the Appeal Court, and the appeal was dismissed.

**UNSOUND MEAT.**

WILLAND *v.* BUTLER HOGAN (King's Bench Division).

*Public Health Act*, 1875, ss. 116, 117—*Unsound Meat—Deposited for Sale—Evidence.*

Meat was found in a safe, and, on examination, proved to be unsound and unfit for the food of man. There was other meat which was perfectly sound. The unsound meat was seized, taken before (and condemned by) a magistrate, and afterwards destroyed. The justices convicted, and stated a case for the High Court.

*Held*, That, before there can be a conviction, satisfactory evidence must be produced that the unsound meat found was intended for the food of man, and that there should be no conviction necessarily merely because the meat was found in a shop without there being, apparently, any intention of exposing it for sale. *Appeal allowed.*

**VACCINATION.**

HITCHCOC AND CHESHIRE *v.* WANDSWORTH AND CLAPHAM GUARDIANS.

*Vaccination Acts*, 1867 *to* 1898—*Vaccination Order*, 1898, *article* 29 (1)—*Expenses of Prosecution include necessary Legal Assistance.*

*Held*, That legal assistance in the conduct of prosecutions for breaches of the Vaccination Acts is a necessary expense of the Vaccination Officer under article 29 (1) of the Vaccination Order, 1898, and that Boards of Guardians have no power to overrule the Vaccination Officer's decision to provide such—such decision being *bona fide.*

NISBET *v.* LLOYD.

*Vaccination Acts—Neglect to cause child to be vaccinated within six months from birth—Refusal of certificate of exemption on seven occasions—Offence "of trifling nature."*

Application was made on seven different occasions for exemption (vaccination) certificates in relation to one and the same child, on the ground that the parents conscientiously believed that vaccination would be prejudicial to the health of that child, and on each occasion the certificate was refused. The child not having been vaccinated within six months from birth, a summons was taken out against the father, but was dismissed under s. 16 of the Summary Jurisdiction Act, 1879, on the ground that the offence was "of a trifling nature."

*Held*, That the offence was not of a trifling nature, but that the justices ought to have convicted. *Appeal allowed.*

# THE EDITOR'S TABLE.

In this section we endeavour to bring before our readers the work which is being done by inventors, and the manufacturers on their behalf.

All that we ask of the manufacturers is that a sample of the production, together with a description and illustration (if necessary) should reach us by November. We experience some difficulty in obtaining compliance with these simple and necessary conditions, and trust that our friends will recognize that the insistence upon them is unavoidable.

In examining any invention we have to decide: (1) Whether it is an improvement upon existing appliances?; (2) Does it fulfil the purpose for which it is intended?; (3) Will it stand ordinary wear and tear?; (4) Is it portable? (if it has to be carried about); and finally, Is the price reasonable? Failure in any one of these particulars prevents our recommending it to our readers, to whom we are responsible for the advice we offer.

We might remain silent on points where the invention fails, but if we did so the reader who purchased would be dissatisfied with both the manufacturer and ourselves. Many of the things submitted to us are made at the request of particular practitioners, and the makers are only responsible for carrying out the inventor's ideas. If some of these would only look up the back volumes of the *Medical Annual*, they would often find something much better than they had thought of already procurable, and we should be saved the necessity of an unfavourable notice.

The progress made in the manufacture of Medical and Surgical Appliances during the last ten years is remarkable, and many members of our own profession can claim a share in this advance. There is less opening now than formerly, for the inventor who has not studied the very latest appliances before he commences to improve.

In respect to Pharmaceutical Products and Dietetic Articles, we are always ready when a sufficient quantity is sent to us *early in the year*, to arrange for it to be tested in Hospital practice and reported upon; under other circumstances our knowledge is necessarily more limited; but frequently the simple information as to where a particular preparation can be obtained is all the practitioner requires. We are anxious to express no opinion except as a result of practical knowledge, and it is to this fact that a notice in the *Medical Annual* has come to be valued. If we departed from the principles which have guided us since the first volume of the *Annual* was published, we should forfeit a position which enables us to be of some use both to the practitioner and the manufacturer.

## MEDICAL AND SURGICAL APPLIANCES.

**Arm Sling (The Handy).**—The idea of this sling is simplicity itself, as will be seen from the illustration. It can be adjusted in a moment for either male or female patients, and enables the arm to be retained at any angle. It will save surgeons a great deal of trouble and give comfort to the patient. The price of these slings is only 6/- per dozen, and we expect there will be a great demand for them, for they supply an admitted want. R. Sumner & Co., Ltd., Liverpool (*Fig.* 55).

*Fig* 55.

Messrs. Ferris & Co., Ltd., of Bristol, put up a somewhat similar arm sling in a neat box for 1/-, which affords an efficient support to the injured limb, and has a patent buckle which facilitates adjustment.

**Audiometer.**—The box is fitted with one or more tuning-forks, and as the force which sets the fork in action is always the same, and as the sound is heard by the operator and patient under the same conditions and at the same time, an exact record of the time of appreciation can be kept, which is a valuable reference in the future treatment of a case, or for noting

the effect of particular treatment, inflation, paracentesis, etc., on audition. The C fork is the ordinary test. The terminals are of glass, and can be removed after use, for cleansing. The apparatus has been made by Messrs. Down Bros., at the suggestion of St. George Caulfeild Reid, M.R.C.S. (*Fig.* 56).

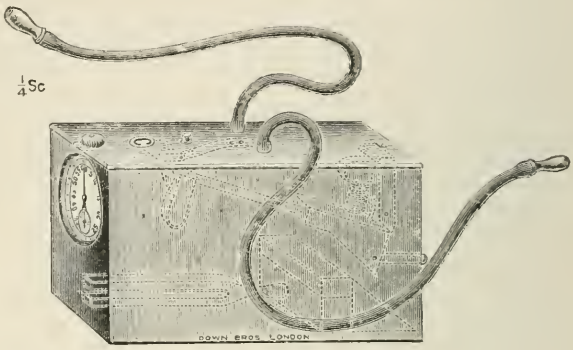


*Fig.* 56.

**Blood-Testing Case.**—This is devised by L. S. Dudgeon and C. G. Seligmann. It contains in a convenient form most of the appliances required for the examination of the blood. It is made by Messrs. Allen & Hanburys, Ltd., 48, Wigmore Street, W.

**Candle (Triple-Wick).**—Sir Wm. Gowers has designed a candle, having three wicks, a quarter of an inch apart, which when lighted gives practically one broad flame. It gives quite a brilliant little light, is well suited for clinical work, and has the great advantage of portability and convenience. It is put up by Mr. T. Hawksley, 357, Oxford Street, W., in a metal tube with cover which acts as an extinguisher (*Fig.* 57). This is not a very happy arrangement, as the metal gets hot when in use. Obviously it need not be in contact with the candle at all when lighted, and we expect Mr. Hawksley will soon improve the holder.

*Fig.* 57.

**Case Book (Pocket Emergency).**—This is primarily intended for officers in the R.A.M.C., and is useful to the practitioner for recording clinical observations at the time of his visit. It gives a small temperature chart, with limited spaces on either side for notes. A book of thirty charts is small enough to go into the breast-pocket, has a cloth cover, and only costs 6d. We think that by using the back of the chart for additional notes it will prove a very useful pocket record in any acute case, and our readers would do well to secure a specimen copy. It is published by Messrs. Reynolds & Branson, Ltd., of Leeds.

**Catheter Case.**—A seamless metal cylinder for carrying or storing gum elastic catheters. The lid has an ingenious arrangement by which it forms a box in which an antiseptic lubricant can be kept (*Fig.* 58). These are made by Messrs. R. Sumner & Co., Liverpool, and cost 4/-.

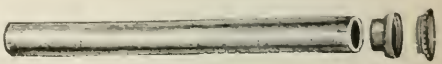

*Fig.* 58.

**Clinical Outlines.**—A diagram giving a section of the trunk parallel to the brim of the pelvis has been suggested by Dr. J. B. Hellier as a means of recording the position of tumours, etc. These are put up in book form, gummed and perforated, by Messrs. Reynolds & Branson, of Leeds.

*Fig.* 59.

**Combination Dressing.**—The Galen Manufacturing Co., Ltd., Wilson Street, S.E., have prepared a small bandage with a gauze pad covered with protective at one end. This supplies a dressing for a wound, which can be instantly applied in a case of emergency. The whole being in one piece greatly facilitates the adjustment of the dressing.

**Corset (The "Gracease").**—The "Domen" Belts Co., 456, Strand, W.C., have been very successful in combining elegance with hygiene, and by the use of their straight-belt corset we have given immediate relief to a large number of patients suffering from fibroid tumours, relaxed abdominal walls, or obesity. They have now introduced a corset called the "Gracease," which, while giving all the pressure necessary to support the figure, allows of free expansion of the lungs. This is secured by a narrow elastic insertion under the arms on each side, which renders tight lacing impossible and yet gives full support. We can cordially recommend this corset (*Fig.* 59).

**Dispensing Scale.**—Messrs. Allen & Hanburys, Ltd., have made a dispensing scale on the steel-yard principle similar to one we described in our issue of 1903. As we stated then, we believe it to be the most practical and convenient form of balance for dispensing purposes.

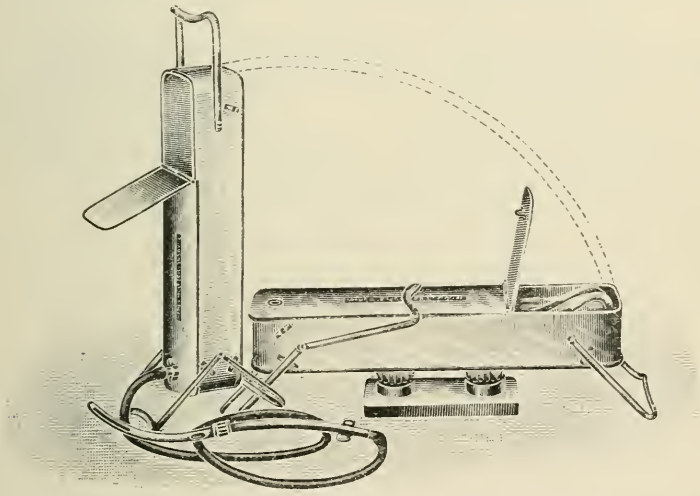

*Fig* 60.

**Douche-Sterilizer.**—Dr. W. Salisbury-Sharpe has invented an appliance which can be used either as a douche or a sterilizer, and which has the merit of being compact and easily portable. The illustration (*Fig.* 60) will explain the method of its employment, and we have nothing but praise for the ingenious mechanism which enables it to serve both purposes in an admirable manner. It is also useful to pack many of the smaller articles required in

attending an obstetric case. It measures when closed 15½ by 3½ by 2½ inches, has a capacity of 2½ pints, and weighs under 2 lbs. Its cost complete, with spirit lamp and india-rubber tube, is 26/6, and it is excellently made in every detail by Messrs. Mayer & Meltzer, 71, Great Portland Street, W.

**Double-ended Probes.**—Messrs. Ferris & Co., of Bristol, supply a set of twelve double-ended probes with universal handle in a box for 3/6. The probes are made of aluminium, and may be bent to any desired shape; they have a screw serration at each extremity which facilitates the application of cotton-wool or gauze to make swabs, and enables a dozen swabs to be prepared before the commencement of an operation, which is an advantage.

**Ear Instruments (Politzer).**—In a tiny metal case we have eleven instruments, all fitting into one handle with two ends, one of which is at an angle, so that any instrument can be used either at an angle or straight. It provides everything that can be required for minor operations upon the ear in a most compact form, and yet nothing is sacrificed to effect this object. As an example of the skill of the surgical instrument maker, this case is delightful to inspect. The compactness with which instruments are now produced, renders it possible to carry an enormous variety in the surgical bag; and to have the instrument at hand the moment it is wanted is half the battle in daily practice: to try and make something else answer the purpose is to court failure. Messrs. R. Sumner & Co., of Liverpool, produce this case (*Fig.* 61). It costs 30/-.

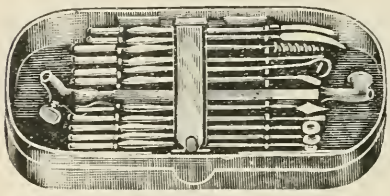

*Fig.* 61.

**Ear Speculum (Dundas Grant).**—This speculum is only a tube at its extremity, and the remainder has one side open, so that it permits the whole auditory canal, and not merely the tympanum, to be inspected. It is furnished with a lens which is capable of being immediately focussed to the observer's sight. It also has a handle which is very useful in practice. It is quite the best ear-speculum which has yet been produced. Messrs. R. Sumner & Co. are the manufacturers, and we warmly recommend it (*Fig.* 62).

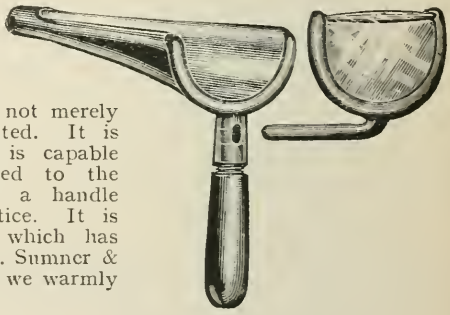

*Fig.* 62.

**Emergency Case.**—Messrs. Allen & Hanburys, Ltd., put up in a neat case the various articles likely to be required for first aid for "motor cars," etc. We do not know that riders in motor cars are more likely to require such help than others, but the case may be recommended to all travellers, and even to those who stay at home, as a means of meeting surgical emergencies.

**Exerciser (Electric).**—This exerciser being made of metal there is no rubber to perish, and the appliance will last an indefinite time. We have carefully tested it and find that it fulfils all the purposes for which such an exerciser is employed. It is made in various strengths to suit the powers of children or adults; it has arrangements by which a Faradic battery can be attached to it, so that the patient receives a Faradic current during the exercise. The price with battery attached is 50/- It is made by Messrs. Herbert Terry & Sons, Novelty Works, Redditch.

**Electrical Appliances.**—Messrs. Reynolds & Branson, Ltd., of Leeds, have made a resistance table for connecting to continuous-current electric mains for the purpose of reducing the high voltage to a pressure suitable for cautery work, for small motors, or supplying current to X-ray coils, so wound that the instruments and patient are quite safe. The voltage and ampèrage are variable at will, and there are suitable instruments to indicate current being used. The resistances are made up to satisfy the Board of Trade requirements. The cost for 100-v. is £10, or for 200-v. £15, complete with flexible plug, fuses, and indicator lamp (*Fig.* 63).

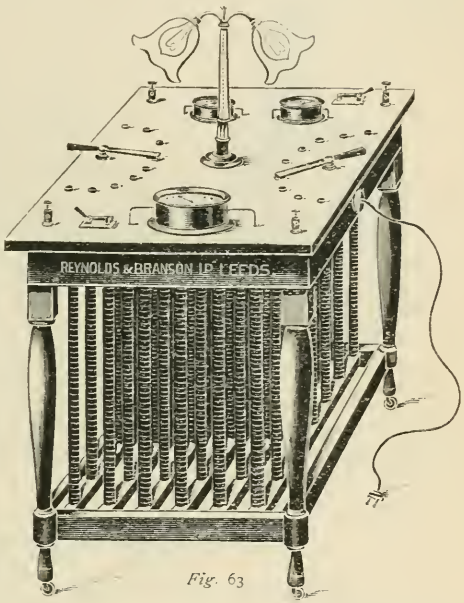

*Fig.* 63

They also make smaller resistances (portable) to plug to an ordinary lamp socket, and giving current to light small exploration throat lamp, or for galvanization. These cost from 30/-.

The same firm also manufacture a Protecting Screen to place round X-ray tubes to prevent side rays reaching the patient's eyes, or the operator. These screens fit any ordinary double anode tube, and the aperture for egress of rays may be varied to suit X-ray treatment cases (*Fig.* 64). Cost 10/6 each.

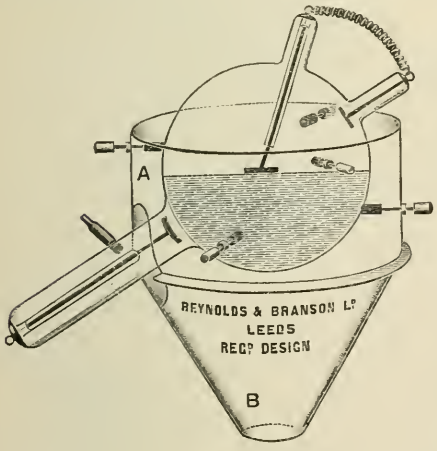

*Fig.* 64.

**Feeding Cup (The Ideal).**—This is made of glass, and so designed that invalids can be given nourishment or medicine while in the recumbent position. It is graduated for both tablespoons and teaspoons, and the cost is 5/- per dozen. This is unquestionably the best feeding cup that has yet been produced, and should be adopted at every hospital, so that the patient may be spared imbibing through a spout. Made by Messrs. R. Sumner & Co.

**Female Urinal (Albertine).**—We have for a long time been anxious to discover a urinal which women could use in bed, and we have tried a good many expensive arrangements and failed. Messrs. Ferris & Co. send us a small china receptacle so shaped that it can be adjusted over the urethra by means of a bandage or diaper, or held in position by the patient. This is connected by 4 feet

of rubber tubing with a receptacle under the bed. The cost of the whole is 5/6. We believe this will meet the requirements of nine patients out of ten, but we have not yet had time to make an extensive trial. It appears to us, however, that this little appliance will solve one of the perennial difficulties of everyday practice.

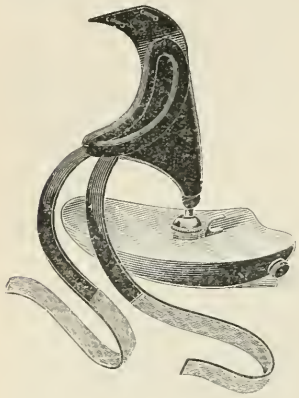

*Fig.* 65.

Messrs. Salmon, Ody & Co., 157, Strand, W.C., have also attempted to meet the difficulty by an appliance of more elaborate description, as will be seen from *Fig.* 65. We have had no opportunity of testing it. It appears to us more suitable to patients who have a nurse to adjust the instrument when required, than for comparatively helpless invalids; but our readers are quite as well able to judge of this as we are.

**Forceps for Removal of Stitches.**—In the forceps devised by Mr. Muirhead Little the ends of the blades are made as follows One a blunt-ended prong, the other a hole through which the prong passes when the blades are pressed together (*Fig.* 66). This greatly facilitates the work of removing stitches. Messrs. Down Bros., are the manufacturers.

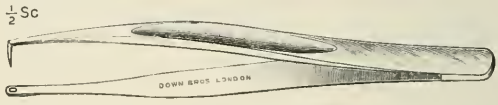


*Fig.* 66.

**Forceps (New).**—These are similar to the well-known forceps of Greig Smith, except that in this improved form instead of two hollow sides, one side is in

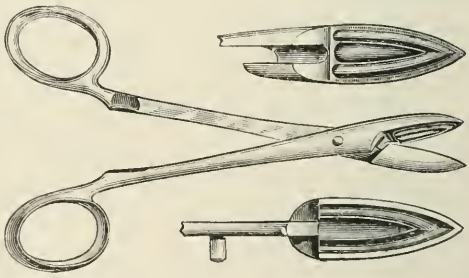

*Fig.* 67.

relief, while the other is made to fit into it, so that an absolutely firm grasp is secured without injury to the tissues. We believe that surgeons will at once realize these advantages. Messrs. R. Sumner and Co., Lord Street, Liverpool. (*Fig.* 67.)

**Glass Eye-Douche.**—This instrument from Messrs. Sumner & Co. has a glass bulb to fit the eye, into which a fine spray is admitted from an ordinary douche tin. It has a tube at its lower part into which the water escapes, and can be conducted by means of a piece of indiarubber tubing to a convenient receptacle (*Fig.* 68). The price is only 1/-.

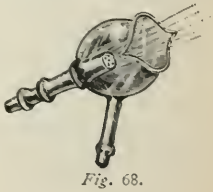

*Fig.* 68.

**Hospital Screen (The "Wreford").**—This is a practical invention, the utility of which will at once suggest itself. It can be drawn up to the middle of the bed, so that a single screen affords perfect privacy to the patient. It is made of canary wood, and has patent hinges which enable the wings to be folded in any direction, and is furnished with a holland cover (*Fig.* 69). It costs 25/-, and is made by Messrs. Reynolds & Branson, Ltd., Leeds.

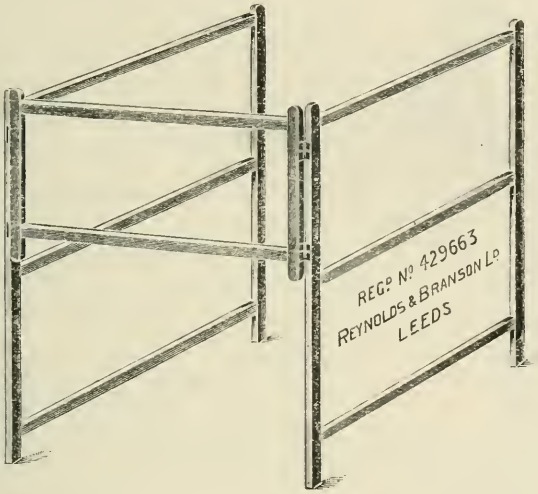


*Fig.* 69.

**Hypodermic Syringes.**—Messrs. R. Sumner & Co., of Liverpool, send us an aseptic hypodermic syringe, which works perfectly and is capable of being cleansed in all its parts, packed in a neat metal case, the price of which is 2/6. This is evidence of the advance which is being made in reducing the cost of surgical appliances.

Messrs. Oppenheimer, Son & Co., Lim., have recently produced a glass syringe with a vulcanite plunger as an improvement on the ordinary glass syringe. We have not been able to personally examine this, and the price is not stated.

**Inhalers.**—If we printed the descriptions sent us during the year of the various new inhalers for chloroform, ether, and chloride of ethyl, it would occupy all the space we can give to this section. The inventors of these appliances do not appear to acquaint themselves with the merits of the best modern inhalers, but most usually improve upon some old pattern, and then describe their improvements in such voluminous language as to convey the idea that we have reached an epoch-marking period in the history of anæsthetics. The practitioner, in buying an inhaler at the present time, has a right to expect that it shall be equally useful for the administration of chloroform, ether, chloride of ethyl, and somnoform. It should have a transparent face-piece, with detachable rubber rim, so that this can be removed when chloroform is administered. It should have a wide bore leading to the gas chamber, and the bag should be furnished with a valve which will enable the air to be admitted or shut off. When an inhaler complies with these conditions the smaller modifications are of less importance, but it would not be right for us to commend a particular inhaler on account of some small improvement, unless the essential requirements have received consideration.

**Intra-uterine Tube (Budin's).**—This is made of malleable metal, so that it can be bent to any curve and adapted to any particular case. It will meet many cases where a rigid tube would be difficult to insert. It costs 5/6, and is supplied by Messrs. Ferris & Co., of Bristol.

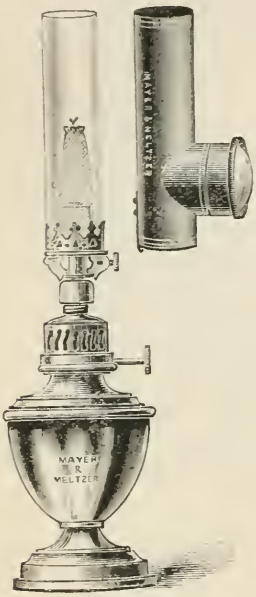

*Fig. 70.*

**Lamp (Creswell Baber's).**—We illustrate a lamp for laryngoscopic and other purposes suggested by Mr. Cresswell Baber. It is an incandescent lamp, burning methylated spirit, and gives a brilliant white light. It costs 40/6 complete, with condenser, and box for carrying it to patient's house. This measures 13 by 5½ by 8½ inches, so that it is fairly portable. It is made by Messrs. Mayer and Meltzer, 71, Great Portland Street, W. (*Fig.* 70.)

**Measure for Volatile Anæsthetics.**—Under the name of the "Antivolat" Messrs. Reynolds and Branson, of Leeds, have introduced a very ingenious instrument for measuring chloroform and other rapidly volatile fluids. We would advise those interested in this appliance to send for an illustrated circular describing the method.

**Metal Case for Vaseline, etc.**—Messrs. Ferris and Co. send us an elegant little case lined with glass, in which vaseline or other emollient can be carried in the surgical bag. It would prove also very useful for a number of other purposes, such as a holder for silk, needles, and other small articles which it is necessary to keep aseptic. It costs only 2/-.

**Mouth Gag (Improved).**—This gag, when *in situ*, curves round the cheek out of the way of the operator (*Fig.* 71). It is a very practical little instrument, being instantly released by the touch of a spring, and requiring no force to open it. Its cost is 8/6. Messrs. R. Sumner & Co., of Liverpool.

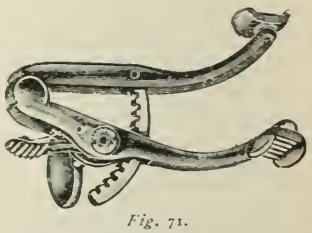
*Fig. 71.*

**Mucus Evacuator.**—To practitioners who have on their visiting lists a considerable number of obstetric cases during the year, the little instrument devised by Mr. Spencer Sheill (Dundrum, Co. Dublin), and called by him his "Mucus Evacuator," will prove a boon and fill a long-felt want. Those in large practice know how frequently children are born with a considerable amount of mucus in the pharynx and larynx, which must be removed at once, and indeed meconium in the pharynx is by no means rare in complicated cases. It is for the ready and complete removal of this that the instrument has been devised, and it will hardly be denied that a means of doing this quickly and safely without the necessity of the disgusting, not to say risky, method of applying suction by the mouth to a catheter, will be welcomed as

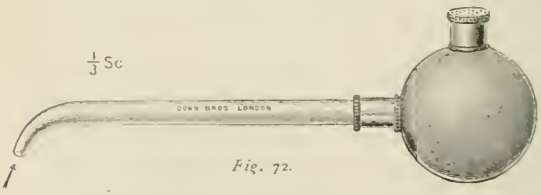

*Fig. 72.*

a distinct advance in midwifery methods. The instrument has passed the experimental stage, and has been in use for a considerable time in the Labour Wards of the Coombe Hospital, Dublin. Its simplicity, as can be seen in *Fig. 72*, will appeal to most, there being nothing to get out of order. The whole article may be boiled for sterilizing purposes without taking the parts asunder. Should an accident cause the breaking of the glass tube, a new one may be fitted in a moment by the user at a cost of a few pence. If preferred, a metal tube may be substituted for the glass, the instrument then becoming useful to the anæsthetist also, for withdrawing mucus from the pharynx, much more conveniently than by the old method. The instrument is made by Messrs. Down Bros., Ltd., London.

**Needle-Case (Surgeon's).**—Messrs. Ferris & Co., of Bristol, have produced a neat little needle-case containing every variety of needle the surgeon may require, ready for use at a moment's notice. The cost is 2*l*-.

**Needle-Holder (Improved).**—We have examined a good many needle-holders of recent years, some of great merit, but for practical use we like none so well as one produced by Messrs. R. Sumner & Co., of Liverpool (*Fig. 73*). It will take any shaped needle, and directly the needle has passed through the tissue it is released by gentle pressure on a spring which one finds ready

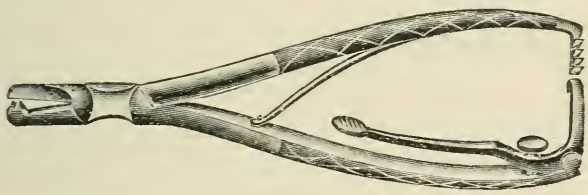

*Fig. 73.*

at one's thumb. It works easily and quickly, and we much prefer it to those where the needle is released by increasing the grip. The surgeon who tried this instrument for us was charmed with the facility with which he could release and pick up his needle, and considered it by far the best appliance of its kind he had used.

**Needle-Holder (Multiple) for Electrolysis.**—This needle-holder, made for Dr. W. T. Freeman, F.R.C.S., of Reading, by Down Bros., Ltd., is arranged for monopolar electrolysis, and a convenient method of completing the circuit is by immersing the "indifferent" electrode in a suitably-shaped vessel containing a saturated solution of common salt, and then placing the hand or some other portion of the patient's body in the vessel. The advantages claimed are: (1) The holder is made for use with ordinary needles, and admits of fresh, or larger, or smaller sized needles being substituted as required; (2) From two to five needles may be employed at a time, and their parallelism is perfectly maintained; (3) The space between the individual needles may be altered at will, say, from a needle's breadth to practically any useful distance. In practice the instrument has been found most useful for the destruction of warts, moles, capillary nævi, recurrent nodules of lupus, and the edges of rodent ulcers (*Fig. 74*).

*Fig. 74.*

**Obstetric Satchel.**—This consists of two large tins, about 16 by 7½ inches, imposed one above the other so as to leave a space between the bottom of each. In this is placed a hold-all, intended for retaining bottles and instruments in position. The whole is secured by a canvas wrap and strap. The tin trays are intended to be used as "lotion trays" and "sterilizers." We have no

doubt that the arrangement meets the requirements of Dr. J. W. Ballantyne, of Edinburgh, who designed it. Messrs. Arch. Young & Son, of 57 & 61, Forrest Road, Edinburgh, have carried out the inventor's ideas in an excellent manner: but it will need to be made more portable and handy before it will find approval with the majority of the profession.

**Pessary.**—It is claimed for this pessary, which has been made by Messrs. Down Bros., Ltd., for Dr. Helm Montague, of Worksop, that it will keep up the uterus when others fail, for the reason that a much larger pessary than usual can be worn, owing to the ellipse cut out of the anterior lip of the support preventing dragging-up of the anterior wall of bladder, and preventing the incontinence of urine frequently complained of with a large pessary. (*Fig.* 75). With a smaller support the uterus frequently comes down beside the pessary.

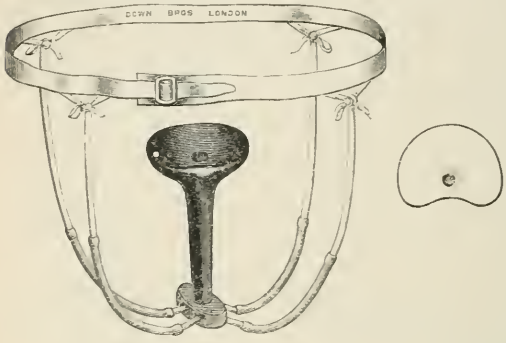


*Fig.* 75.

**Powder Duster.**—Messrs. Ferris & Co. produce an elegant metal powder duster with two compartments, enabling the practitioner to carry two different dusting powders in the one case, and ready for immediate use. It is a very practical contrivance. It costs 2/-.

**Protective (Waterproof).**—Messrs. R. Sumner & Co., of Liverpool, send us a sample of a waterproof cotton fabric, which is efficient, if less elegant than jaconet or oil-silk. Its great recommendation is its cheapness, costing as it does only 9d. a yard. It is intended for hospital use.

**Receivers (Toughened Glass).**—Messrs. R. Sumner & Co. are making a number of kidney-shaped basins and bowls of toughened glass, coloured. These, of course, do not tarnish in use, are easily cleansed, and are cheap. They meet every requirement for which such bowls are intended, and they would require a good deal of knocking about to break them.

**Rectal Oil Douche (Herschell).**—This consists of a funnel and indiarubber rectal tube and a spring-clip. The advantage of the funnel is that it enables us to get rid of pneumatic pressure when administering the oil. It should be allowed to flow into the bowel by its own weight—and that very slowly. Here a tap would be more efficient we think than the spring-clip provided in this appliance. It is also important that the oil should be passed beyond the internal sphincter, but this is furnished with only a short rectal tube. The advantage of portability in such an instrument has been somewhat overlooked. It is made by Messrs. Allen & Hanburys, Ltd.

**Retractors (Hernia).**—In the Cuthbert Wallace retractor the division is long enough to allow of the knife being used quite freely without the chance of damaging the edge of the same. The depth of both retractors and the curve have been carefully made so as to hold the spermatic cord, vessels, etc., out of the way of the operator. Messrs. Allen & Hanburys, Ltd.

**Retractors.**—Pozzi's abdominal retractor consists of two blades wide enough to hold the abdominal walls, which are kept asunder by a rack arrangement in the handle. It appears to us convenient for the object it is intended to serve. It is made by Messrs. Allen & Hanburys, Ltd.

Mr. Brennan Dyball has devised an arrangement by which three retractor blades fit into a common handle. The arrangement will be understood from the illustration (*Fig. 76*). These are made by Messrs. Down Bro., Ltd.

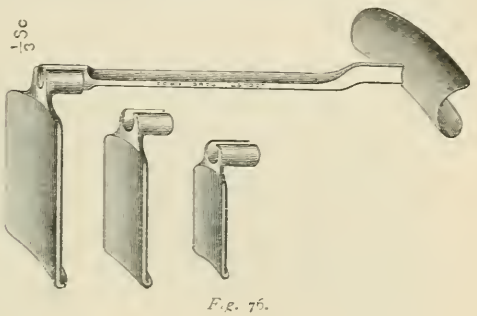

*Fig. 76.*

**Scissors (Open Ring Handle).**—These are strong scissors with separating blades for cleansing, and one sharp and one blunt point. They are well adapted for most surgical purposes. The special point claimed for them is the shape of the handle, which enables them to be picked up instantly, which is not the case with the ordinary scissors or forceps. It is so simple, that the wonder is that no one thought of it before, and now we have seen it we shall want our dressing forceps made with the same kind of handle. Perhaps Messrs. R. Sumner & Co., the manufacturers, will oblige us.

**Serous Effusion Apparatus (Barr).**—Dr. James Barr, Senior Physician, Liverpool Royal Infirmary, made the important discovery that if a drachm of 1–1000 solution of adrenalin was injected into the serous cavity after the removal of the fluid in cases of effusion, the fluid ceased to collect. He gives some interesting cases of ascites, and pleural and pericardial effusion thus treated in the *British Medical Journal*, March 19, 1904. He further found that if sterilized air was injected to take the place of the fluid evacuated, adhesions were prevented and the results most satisfactory. Messrs. R. Sumner & Co., of Liverpool, have assisted Dr. Barr in devising a simple instrument for carrying out this method. In the illustration (*Fig. 77*), the operator's hand is shown injecting the air, below is the trochar and canula, and connected with a syphon tube for conducting the fluid to a convenient receptacle. Dr. Barr's discovery is one of the first importance, and the apparatus employed simplifies its application, so that we hope it will come into general use. The entire apparatus is turned out by Messrs. R. Sumner & Co. in a neat metal box, and is complete even to the indiarubber tubing for making the connections. It is manufactured and sent out in a style which does credit to the firm, and at a price which is extremely moderate. We do not think any hospital would be justified in failing to have this instrument at hand. We used the apparatus in a case of ascites attended by general dropsy from heart disease. In this case we should not have considered the injection of adrenalin of much importance, but after the evacuation of the fluid a small abdominal vein gave way and there was some hæmorrhage. The apparatus enabled us to immediately inject adrenalin, which quickly checked the hæmorrhage.

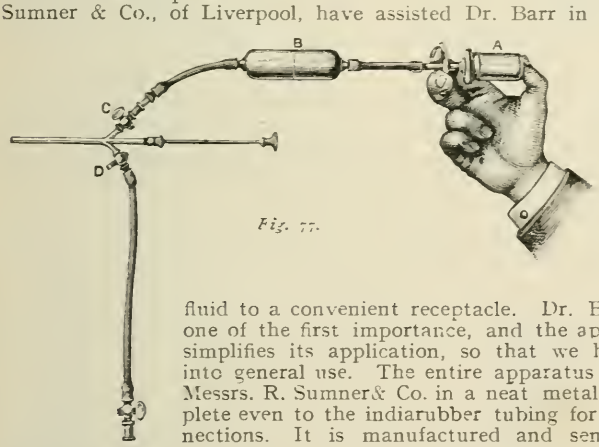


*Fig. 77.*

**Snake-Bite Outfit.**—This is a convenient pocket arrangement for providing the means of instantly applying permanganate of potash in cases of snake-bite.

It contains a wooden holder with small lancet at one end, and permanganate of potash in powder at the other, a supply of permanganate, tape, lint, and strapping. There is no emergency when "first aid" is more imperative than snake-bite, and travellers in tropical countries cannot do better than carry this little case, and follow the directions given by Messrs. Ferris & Co., of Bristol, who provide it.

**Sprays and Nebulizers.**—*The "Delamere" Nasal Spray* is made wholly of actinic glass, and has two nozzles so arranged as to fit the anterior nares and spray both simultaneously. There is no part of the instrument likely to get out of order, it will admit of the use of any kind of solution, is easily cleansed, and is small and compact. It costs only 3/-, and we commend it highly as a most ingenious and useful invention. It is made by The Galen Manufacturing Co., Wilson Street, New Cross Road, London.

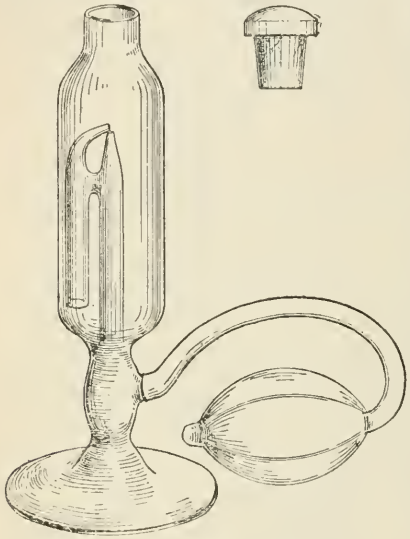

*Fig.* 78.

*"The Glaseptic" Nebulizer.*—The general construction of this instrument will be understood from *Fig.* 78. It is made entirely of glass, except the bellows, and it will be observed that the fine glass points which are liable to breakage are inside the vessel, and therefore protected. It can be kept absolutely clean, and used for any kind of solution (aqueous or oily), and it will spray the last few drops of liquid. The nebulizer is only $3\frac{1}{2}$ inches in height and less than 2 inches in diameter, so that it can easily be carried in the pocket if required. We consider that this is the most practical instrument for nebulizing which has yet been produced, and we are sure that all who give it a practical trial will endorse our opinion. It is manufactured by Messrs. Parke, Davis & Co., 111, Queen Victoria Street, E.C.

*The New Nebulizer.*—The style of this apparatus will be readily understood from *Fig.* 79. It throws a fine spray when used with either oil or water, and may be used for either the nose, mouth, or pharynx. Its cost is only 2/6, which shows how very cheap these nebulizers have become without any loss of efficiency. It is supplied by Messrs. R. Sumner & Co., of Liverpool.

*Fig.* 79.

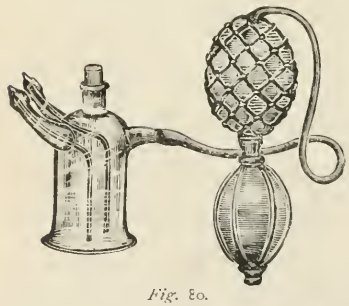

*Fig.* 80.

*Twin Nasal Spray (Fränkels).*—This is made wholly of glass, and has a nozzle for each nostril. It is perfectly aseptic and may be used for oily or aqueous solutions. It is filled from the top and secured by an indiarubber stopper. This gives a coarse spray well suited for cleansing the nose with a saline solution in cases of post-nasal catarrh. The nebulizers give too fine a spray for this purpose, while the

nasal douche we regard as dangerous. This little spray, costing 2/6, appears to us an ideal instrument in the class of case where a spray is needed for cleansing. Messrs. R. Sumner & Co. are the manufacturers. (*Fig.* 80.)

**Sputum Flasks.**—Great ingenuity has been shown in the manufacture of these indispensable vessels, but we do not think the inventors of some recently brought to our notice are aware of it. Messrs. Allen & Hanburys, Ltd., send us a metal mug with a metal cover, which is lifted by the pressure of the thumb of the hand which raises the mug, so that only one hand is necessary. This is right; but the clatter made by the lid in falling into its place is a distinct objection to its use. It is the invention of Mr. Sydney Williams.

Messrs. Down Bros. send us particulars, without samples, of two, invented by Dr. Lloyd Smith, who for some reason thinks the patient should have one for night and another for day. The day one (*Fig.* 81). is of glass with a

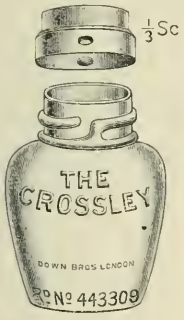


*Fig.* 81.

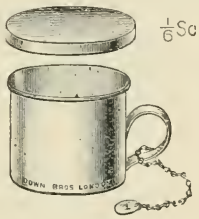


*Fig.* 82.

bayonet-jointed cover, so that it requires the use of both hands every time it is used—a thing to be avoided. The night one (*Fig.* 82) appears to be a tin mug, also requiring two hands for its use, and having a chain with a tin label upon which the number of the patient's bed can be stamped. There are better appliances in the market.

**Sputum Handkerchief.**—Messrs. Ferris & Co. supply these in two varieties: Silk texture at 2/2 per 100, and cotton texture at 2/- per 100. They are made of Japanese paper and are very elegant.

**Stomach-washing Apparatus (Herschell).**—This consists practically of a large funnel, a stand for it, and an œsophageal tube. It would do well enough for the consulting room or hospital ward, but is not sufficiently portable for ordinary use. Messrs. Allen & Hanburys, Ltd., are the manufacturers.

**Storage Boxes for Bandages.**—Messrs. R. Sumner & Co., of Liverpool, make a large number of handy boxes in japanned tin, enamelled inside and out, for storing bandages, etc. Some have trays and divisions, and all have lock and key. They form an efficient way of keeping dressings aseptic.

**Super-Impermiette.**—Under this name the Liverpool Lint Co. have produced a waterproof material which is as soft and flexible as a piece of silk. We have tested it with boiling water, turpentine, ammonia, and strong carbolic acid solution, and we find that it remains unaffected. Its durability is very great, and it may be used for all purposes where oil-silk would be ordinarily applied. Liverpool Lint Co., Mark Street Mills, Netherfield Road North, Liverpool.

**Support ("Sister Jane").**—This is the invention of Dr. Carline. It is a solid metal support which supports the patient's heel while the leg is being bandaged (*Fig.* 82). It is called the "Sister Jane" because it enables one nurse to do the work of two, and at a cost of 3/6 post free it must be a very cheap "Sister." We have practically tested this little invention, and think that there might be one or two in every surgical ward. Messrs. Reynolds & Branson, of Leeds, are the manufacturers.

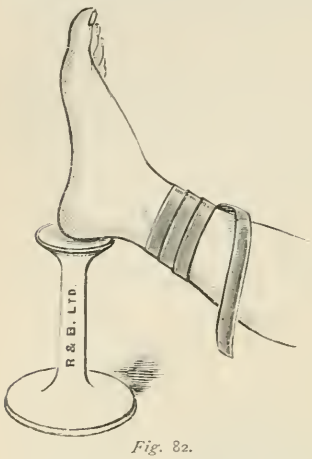


*Fig.* 82.

**Surgical Tables, etc.**—Messrs. Allen & Hanburys, Ltd., have made a speciality of fitting up operation rooms and providing surgical tables, etc. It is impossible to describe here their improvements in this respect, but a visit to their works would be useful to any surgeon interested in the subject.

**Suture Forceps (for Piles).**—Mr. A. S. Barling has devised these forceps to carry out the method of treating piles described by Mr. A. B. Mitchell, of Belfast, in the *British Medical Journal*, Feb. 28, 1903. The construction will be understood from the illustration (*Fig.* 84). They are made by Messrs. Down Bros., Ltd.

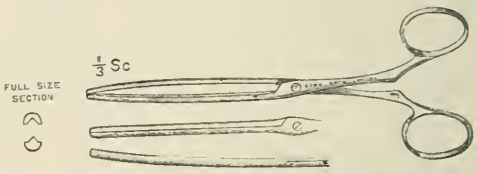


*Fig.* 84.

**Temperature Chart Holders.**—A flat piece of enamelled metal with a powerful spring across the top for holding temperature charts, etc., is the latest device for keeping the clinical records of the patients in hospitals. It is cleanly, efficient, and convenient. We have adopted one of these for keeping our letters in order on the writing-table, and like it better than anything else we have tried. Messrs. R. Sumner & Co., of Liverpool, are the manufacturers. Cost 3/-.

**Thermometers (Clinical).**—We mentioned in our last issue the clever invention of Mr. G. H. Zeal, by which the index of the thermometer can be replaced by simply pressing a bulb at one end of the tube. We suggested that this might be broken in careless hands, but find after twelve months' use that no accident has happened, and it has saved an enormous amount of trouble. We would strongly advise our readers to try the "Repello" thermometer. Mr. Zeal's latest improvement is a little indicator which

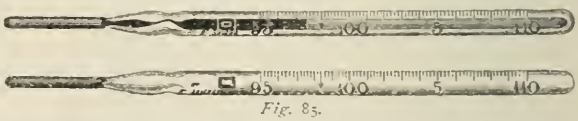


*Fig.* 85.

enables the index of the magnifying thermometer to be more quickly found. This is very simple and effective. It is attached to ordinary thermometers as well as the "Repello" (*Fig.* 85). Mr. Zeal is also the inventor of an "aseptic"

clinical thermometer on a very ingenious plan, in that the thermometer proper has no scale, but it slips into an outer container made of glass, which is marked with the scale and enables the temperature to be read off. (*Fig.* 86).

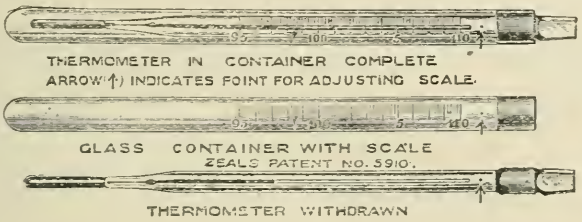
THERMOMETER IN CONTAINER COMPLETE
ARROW (↑) INDICATES POINT FOR ADJUSTING SCALE.
GLASS CONTAINER WITH SCALE
SEALS PATENT NO. 5910.
THERMOMETER WITHDRAWN

*Fig.* 86.

Both the thermometer and its container can be easily cleansed, and by keeping a drop of any antiseptic fluid in the container assurance is made doubly sure. We commend this invention very highly. 82, Turnmill Street, E.C.

**Tongue Cloths.**—These are single squares of firm absorbent material adapted for grasping the tongue for medical or dental purposes. put up in boxes of 100 at 2/-. We have found them useful for a number of purposes in everyday practice, and always like to have them at hand. They are produced by Messrs. Ferris & Co., of Bristol.

**Tourniquet (The Simplex).**—Messrs. Ferris & Co. supply an efficient tourniquet for all ordinary emergencies in a neat box for 1/-. It is just the thing to be included in cases fitted up for " First Aid " use.

**Transfusion Apparatus.**—A perfectly complete apparatus for transfusion has been devised by Dr. George Burford and Mr. Jas. Johnstone. F.R.C.S. It consists of saline tablets, and a graduated measure for their solution, a combined stirring rod and thermometer, and a glass funnel through which the fluid is conveyed by means of an india-rubber tube; the whole is packed in a neat case which renders it readily portable. It is furnished with two needles, and to enable it to be used for intra-venous transfusion it is only necessary that one of these should be blunt-pointed. The inventors have, however, fitted up a special case containing all instruments which are required for opening the vein and closing the incision, so as to make the outfit complete. It is a distinct convenience to have all the instruments and appliances likely to be required in a case of emergency at hand. The apparatus has been excellently made by Messrs. Mayer & Meltzer, 71, Great Portland Street, W.

**Transfusion Needles (Webster).**—In a small metal case (3in. by 1¼in.) we have provided a two-way tube which enables two needles to be inserted at once (*Fig.* 87) and also two blunt needles for inserting into the veins. It is made by Messrs. R. Sumner & Co. Price 10/6,

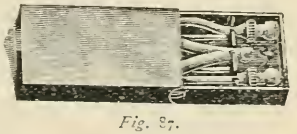

*Fig.* 87.

**Trusses, Adjustable, (Woolley).**—We have been much interested in the adjustable trusses which Messrs. Woolley, Sons & Co., Ltd., of Manchester, have invented and patented. The springs and pads are made distinct from one another, so that a pad of any desired size can be attached to the spring. There is the further advantage that the spring may be contracted or expanded as may be found necessary, while the pad may be set at almost any angle. These adjustments can be made by the surgeon himself while the truss is on the patient's body—a unique feature, which gets over the difficulties usually to be encountered in obtaining an accurate fit. The prices charged for the trusses are most moderate. The practical effect of this invention is

that the practitioner has only to wire that he wants a right or left femoral or inguinal truss, double or single, with large or small pads, and he will receive a truss which he can adjust to any case from 28 to 41 inches, and set the pad to any angle required. The advantage of this to the country practitioner is very great, and we congratulate Messrs. Woolley & Co. on their very practical invention.

**Universal Syringe (Hartmann's).**—We have no hesitation in saying that this syringe, which is sent to us by Messrs. Ferris & Co., of Bristol, is the best which the practitioner can carry in his handbag, because it meets all the requirements of everyday practice. Whether he wants to syringe out a sinus, or a wound, or the ear, the vagina, rectum, or nose, he will have a separate mount well suited for the purpose. It is made of glass and vulcanite, holds a little over an ounce, and is graduated. It only costs 7/6, and we can find no part of it which is likely to go wrong or give trouble.

**Urine Testing Case (Pocket).**—Messrs. Allen & Hanburys, Ltd., have put into a neat little case the appliances for testing a specimen of urine at the bedside. It is quite small enough to be carried in the pocket.

**Uterine Dilator and Flushing Catheter (Revedon's).**—This is an extremely interesting instrument, and of great practical use. It enables the cervix to be dilated to any extent which may be necessary by the gentle turning of a screw, so that the process is very gradual, and the parts dilated are retained in this position for any required length of time. The upper blade of the dilator is a tube through which a douche may be given. (*Fig.* 88.) The advantages of such an instrument are obvious, and we think it will prove one of the most useful a gynæcologist can carry in his bag. It is beautifully made and readily rendered aseptic. It is made by Messrs. R. Sumner & Co., Liverpool. Cost 15/-.

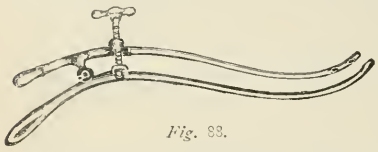

*Fig.* 88.

**Uterine Dilators (Ramsay).**—These differ in the fact that they are hollow, and thus do not in use produce a piston-like action which is likely to drive deleterious matter into the Fallopian tube. (*Fig.* 89.) They are beautifully made and modelled. A complete set of eight costs 36/-. Messrs. R. Sumner & Co. are the manufacturers.

*Fig.* 89.

**Uterine "Flag-Mop."**—This instrument takes the place of Playfair's probe. It has the advantage of permitting a flat piece of lint to be used as a mop, and thus can be instantly disengaged and replaced. It is made of aluminium, and can be easily bent to any shape desired. It is furnished with a spiral handle, which gives a firm grip and facilitates the rotation of the instrument when the lint is rolled round the stem. (*Fig.* 90). It is quite the most practical "mop" we have seen, and only costs 1/6. It is made by Messrs. Reynolds & Branson, of Leeds.

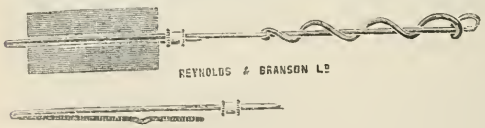


*Fig.* 90.

**Vaginal Pipe (Back-Flow).**—This is made of glass, and differs from the ordinary kind, as the water is thrown backwards, so that the vaginal walls are douched as from above, instead of the discharges being driven upwards. The cost is 9d. Messrs. R. Sumner & Co., of Liverpool.

**Vaginal Speculum (Flushing).**—This can be used as an ordinary two-bladed speculum, dilating the vaginal walls by means of a screw; but it has this additional advantage—the lower blade is furnished with a cup-shaped reservoir which can be connected with an indiarubber pipe. (*Fig.* 91). During operation, instead of having to continually mop out the cavity, it can be simply douched, and the *débris* finds its way to the reservoir and is instantly got rid of. The practical advantage of this is very evident. It is made by Messrs. R. Sumner & Co., of Liverpool, and costs 12/6. We may say that the reservoir in no way interrupts the view, nor is it in the way of the operator.

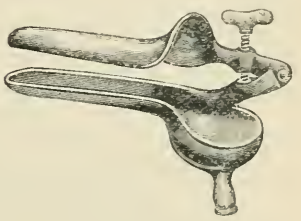

*Fig.* 91.

**Vaporizer.**—This is an invention by Dr. Muthu of the Mendip Hills Sanatorium, intended for vaporizing Schering's formalin tablets, which are placed in water over a small lamp containing methylated spirit, the result being the evolution of formic-aldehyde gas. The appliance is well made, and calculated to be of practical use when it is necessary to disinfect rooms, or for the treatment of tubercular patients (*Fig.* 92).

*Fig.* 92.

**Wafer Wool Tissue.**—This is made from absorbent wool, covered with gauze, and reduced by great pressure to a thin cloth-like substance which readily expands by moisture and heat. It is more absorbent than lint, and is suited for every kind of dressing, whether in the form of ointment or lotion. It may be obtained either in the form of "plain absorbent" or as "sal-alembroth absorbent." Messrs. Ferris & Co., Ltd., of Bristol, the manufacturers, also put it up in rolls 2 to 14 inches in width, and in these the edges are completely covered with gauze so that no raw edges are exposed. We have made an extended trial of this wafer wool tissue, and we prefer it to lint; and in fact to any other material we have used, because it is light and compact, and absorbs discharge so readily.

Messrs. Ferris & Co. also supply wafer wool, which is the same tissue without the gauze covering, in the same varieties as the wafer wool tissue.

**Weights (Dispensing).**—This is an ingenious invention. Instead of the weights being little pieces of metal with their value stamped upon them these are cut to the actual figure they represent. Thus 1, 2, or 4 grains are represented by these figures, and so on. It renders mistakes, almost impossible. A whole set of grain and drachm weights costs 2/6, or with Government stamp 4/6. They are supplied by Messrs. R. Sumner & Co., Liverpool.

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## PROGRESS OF PHARMACY, DIETETICS, &c.

**Acetozone Inhalant.**—A powerful germicide, deodorant, and local anæsthetic. It contains 1 per cent of acetozone dissolved in liquid petrolatum, a colourless, odourless, liquid paraffin. The inhalant is used as a spray from a nebulizer after the nasal chamber has been thoroughly cleansed with an alkaline solution. The germicidal action takes place only after the acetozone has been hydrolysed by the moisture of the mucous membrane, and thus ensures the therapeutic application of the per-acids whilst these are in the

nascent condition. This appears to us to be a very valuable preparation in the treatment of nasal catarrh. Messrs. Parke, Davis & Co., 111, Queen Victoria Street, E.C., are the manufacturers.

**Adrenalin Inhalant.**—This preparation consists of a solution of 1–1000 of adrenalin chloride in an aromatized neutral oil base with 3 per cent of chloretone. It is an excellent application in inflammatory affections of the nose and throat, and is recommended as a soothing and antiseptic astringent in acute rhinitis or coryza. The best results are obtained by spraying it into the nasal passages from a nebulizer. It is of great service in the treatment of hay fever and chronic nasal catarrh, and superior to any other astringent agent because of its bland nature, in the treatment of pharyngitis, tonsillitis, and laryngitis with aphonia. Also used as a lubricant for urethral instruments, tending to reduce the turgescence of the mucous membrane by its astringent action. Messrs. Parke, Davis & Co. are the manufacturers.

**Adrenalin Ointment.**—One thousand parts contain one part of adrenalin chloride in a bland, unirritating, oleaginous base. It is adapted to the treatment of inflammatory conditions of the mucous membrane of the nose in coryza or rhinitis, hay fever, and asthma. It is a useful application to inflamed surfaces, such as external and internal hæmorrhoids. It is put up in collapsible tubes provided with an elongated tip to facilitate introduction into the nose, urethra, and external ear, and by means of an ointment syringe, within the rectum. Messrs. Parke, Davis & Co. are the manufacturers.

**Adrenalin (Glass Capsules of).**—These are put up by Mr. W. Martindale, 10, New Cavendish Street, W., each containing 10 minims of 1–1000 solution.

**Anæstiform.**—Is a new anæsthetic recently introduced by Messrs. Oppenheimer, Son & Co., Ltd., of 179, Queen Victoria Street, E.C. It has been strongly recommended for use in major or minor operations in either medical or dental practice. It is stated to be absolutely safe, very rapid in action, and may be administered to patients in any position, either before or after meals, and without any unpleasant sequelæ. It is employed with O. S. & Co.'s anæstiform inhaler or any other suitable instrument, and is supplied in graduated containers holding approximately 2 fluid ounces, or sufficient for six anæsthesias.

**Aqueous Tinctures.**—There is no doubt that the tax on spirits adds greatly to the cost of many tinctures without increasing their medicinal efficiency. It will be interesting, therefore, to practitioners who dispense their own medicines to know that Messrs. Evans, Gadd & Co., of Bristol and Exeter, have made a speciality of the production of aqueous tinctures. We have examined specimens of the following, and find that they possess all the active properties of the drug, and may be regarded as in every way reliable: Tinct. opii, tinct. hyoscyamus, tinct. nux vomica, tinct. cinchona, tinct. belladonna, tinct. scillæ, and tinct. camph. co. We think our readers will find it to their advantage to investigate this matter, as it involves a large saving of cost without any impairment of efficiency. In hospital practice it would involve an enormous saving of expense.

**Beta-Eucaine Hydrochlor.**—This is a synthetic product described as a hydrochlorate of benzoylvinyldiacetonalkamin. This name is well calculated to break the jaw of any un-German person, but it is claimed that the drug itself is an anæsthetic particularly useful in dental work. It is more stable and far less poisonous than eucaine, and can be boiled without destructive effects. It has been used largely in a 2 per cent solution, which is found to be sufficient to produce anæsthesia of the immediate tissue. It is less active than cocaine, but much safer.

*Eucaine Lactate* is practically the same preparation, except that the hydrochloric salt is replaced by a lactate; this renders it more soluble (up to 22 per cent) and less irritating. Eucaine Lactate (Schering) can be obtained from Messrs. A. & M. Zimmermann, 3, Lloyd's Avenue, E.C.

**Brometone.**—Brometone, $C_4H_7O\,Br_3$, a derivative of bromoform and acetone, is a white crystalline powder with a camphoraceous odour and taste.

The purpose for which it is intended is the same as that served by the bromides, with the advantage of less depression and less liability to the occurrence of what is termed bromism. Brometone is an anti-spasmodic and narcotic recommended in hysteria, epilepsy, exhausting cough, inflammatory or neuralgic pains, etc., and the dose is 5 grs., to be repeated two or three times during twenty-four hours. May be dispensed in capsules or cachets. If sent out as powders, should be wrapped in parchment paper to prevent volatilization. It is prepared by Messrs. Parke, Davis & Co.

**Citarin.**—This remedy is gaining favour as a substitute for colchicum in the pending attack of acute gout. It is given in doses of 30 grs. from four to six times a day at the onset of the attack, and then three times daily. It is prepared by the Bayer Co., Ltd., 19, St. Dunstan's Hill, E.C.

**Cornules Ephedrin Co. (Setterie).**—These have proved very efficacious in the treatment of hæmorrhoids. They are a combination of supra-renal gland, and æsculin, the glucoside of æsculus bark, which has a great reputation in the treatment of hæmorrhoids. The cornules are suppositories of special shape, and cost, with introducer, 2/6 per dozen. Made by the British Pharmacal Co., 12 and 15, Furnival Street, E.C.

**Diastase-Setterie.**—This is the digestive principle of pure malted barley, and it is claimed for it that it is sixty times as powerful a digestant of farina as the best malt extract. One thing in its favour is that it is not too expensive, and it can be recommended to the mother or the nurse, who, from the directions given, can prepare the food in a fresh and palatable manner for children or invalids. An excellent prescription for atonic dyspepsia is: R Diastase Setterie, Glycerol Pepsin, āā ℥ij: one or two teaspoonfuls after each meal. This valuable preparation deserves careful trial at the hands of physicians. It is supplied by The British Pharmacal Co., 12 and 15, Furnival Street, Holborn Bars, E.C.

**Digitalone.**—A non-alcoholic, non-irritating, and permanent solution of the active principles of digitalis, of uniform physiological activity, with a minimum of extractive matter, and standardized by physiological assay. The solution is equal in strength to one-tenth that of the fluid extract, or four-fifths that of tinct. digitalis B.P., the dose being 8 to 15 minims hypodermically. It is a solution of digitalis that can be relied on as containing all the glucosides of the leaves, always uniform and always active, and that is specially suitable for hypodermic administration. Messrs. Parke, Davis & Co. are the makers.

**Ear Bougies.**—Mr. W. Martindale, 10, New Cavendish Street, W., supplies cacao butter bougies with boric acid of convenient size for inserting into the ear. Cocaine is also supplied for administration in the same form.

**Ferric Chloride.**—Messrs. Burroughs, Wellcome & Co. put up compressed "tabloids" of ferric chloride gr. x, which when diluted with 40 minims of water represent a B.P. solution of this strength. This method renders it possible to carry the equivalent of a solution of perchloride in the medical or surgical case without danger of staining it or its contents. They also put up smaller "tabloids" representing 10 minims of the tincture, so that one can be dissolved in a wineglassful of water for a medicinal dose.

**Glycerol Heroin Co. (Gadd).**—This represents $\frac{1}{10}$ gr. of heroin hydrochloride to a fluid drachm, with the addition of the active ingredients of wild cherry bark and Tolu balsam. It is an exceedingly elegant and useful preparation. It is prepared by Messrs. Evans, Gadd & Co., of Bristol and Exeter.

**Glycerophosphates Co.**—Messrs. Burroughs, Wellcome & Co. have put up "tabloids" which they claim to contain an equivalent of 30 minims glycerophosphates co. These are directed to be swallowed whole, one to eight at a time. We admire the convenience of this method of administration, but since we made experiments by putting such preparations into water at 100° F., frequently stirring, and watching results, we have reason to doubt their efficacy, which is dependent upon the fact that certain salts

have been reduced to a soluble form; and unless it can be shown that a compressed pellet containing the same ingredients undergoes rapid and perfect solution in the stomach, it cannot be regarded as a reliable substitute.

*Elixir Glycerophosphate Co.* (*Warner*).—We have tested this preparation for some time in hospital practice, and are very satisfied with the results. It contains the glycerophosphates of calcium, sodium, manganese, and iron, and minute proportions of quinine and strychnine, $\frac{1}{10}$ grain to one ounce. It is palatable and agreeable. It is made by Messrs. W. R. Warner & Co., of Philadelphia, for whom Messrs. F. Newbery & Sons, 27 and 28, Charterhouse Square, E.C., are the British agents.

**Hemisine.**—This is described as a derivative of the supra-renal gland, and is prepared by Messrs. Burroughs, Wellcome & Co. in the form of "Tabloids," "Soloids," and "Enules." The claims put forward for it are those which we associate with the properties of "adrenalin chloride." We do not know whether it is identical or not, as "Hemisine" is simply a proprietory name. The statement that a "tabloid" contains 0·003 of Hemisine conveys no information to the practitioner. We should be glad to have more exact information respecting the nature of the medicament before employing it.

**Heroin.**—Mr. Frank A. Rogers, of 327, Oxford Street, W., has introduced a lozenge which is readily divided into two or four equal parts. Thus the dose of heroin would be full, half, or quarter strength according to the sub-division of the lozenge. The idea is ingenious and practical.

**Hydrozone and Glycozone.**—The first of these is practically peroxide of hydrogen, yielding thirty times its own volume of nascent oxygen. It has a vast field for use as an external agent and dressing, possessing the power of destroying all septic matter. The fact that it combines with local effervescence makes it an ideal solution for dealing with all forms of fistula, as the gases evolved cause the ejection of the diseased products, leaving the tissues clean and healthy. Glycozone is a stable compound which results when pure glycerin is submitted to 15 times its own volume of ozone. It acts upon the tissues more slowly than hydrozone, but is an excellent stimulant to granulating surfaces. Its chief application is for internal disorders, for catarrh of the stomach and intestines, where a remedy which checks fermentation cannot fail to do good. We believe that both these remedies possess a wide field of usefulness, and deserve attention. They are prepared by Lamont, Corliss & Co., 11, Queen Victoria Street, E.C.

**Iron "Alginoid" (Stanford).**—This is a combination of alginic acid and iron, and it is claimed for it that it passes through the stomach unchanged, and does not constipate. We have not been able to test it clinically, but it appears worthy of a trial. Messrs. Evans, Sons, Lescher & Webb, Ltd., 60, Bartholomew Close, E.C., are its agents.

**Kresophen.**—This is a new antiseptic solution, with a strong smell of carbolic acid, than which it is claimed to be both more powerful and less poisonous. It contains 50 per cent of pure cresols, and when dissolved in distilled water forms a clear solution; it does not blacken the instruments, and affords an efficient antiseptic in a 1-200 solution. It is made by Messrs. Willows, Francis, Butler & Thompson, Ltd., of 40, Aldersgate Street, E.C.

**Laxoin (Dihydroxy-phthalophenone).**—This is a synthetic laxative which is claimed to possess advantages over many of the well-known vegetable purgatives. It is not absorbed into the system, but appears to act by stimulating peristalsis. Laxoin is palatable, and can be taken by children and invalids. It does not gripe, cause depression, nor lose its effect by continued administrations. It is indicated in constipation, jaundice, chronic intestinal catarrh, etc. The manufacturers are Messrs. Oppenheimer, Son & Co., Ltd.

**Linctus Codeinæ (Gadd).**—This contains phosphate of codeine $\frac{1}{8}$ gr. to each drachm. It has been found useful in many cases of troublesome cough when morphine cannot be tolerated. It is prepared by Messrs. Evans, Gadd and Co., of Bristol and Exeter.

**Liquor Thymol Alkalinus.**—This is a pleasant mouth-wash put up by Messrs. Woolley, Sons & Co., Ltd., Manchester. It contains thymol, eucalyptol, menthol, benzoate of soda, and borax.

**Malt Extract (Trommer).**—This is not a new preparation, it is almost a household word with the medical profession; but so many extracts of malt have been placed upon the market which are practically only glucose, that it is necessary to point out that the therapeutic value of malt was proved by the extract made by the Trommer process. This preserves the enzymes, which are the active ingredients, and we know now what an important part they play, not only in aiding the conversion of food, but also in destroying the toxins found in the intestinal canal. They act practically as a salutary intestinal disinfectant. We believe the malt extracts have lost reputation on account of the idea that one "malt extract" will do as well as another. Messrs. F. Newbery & Sons, Ltd., 27 and 28, Charterhouse Square, E.C., send us this preparation.

**Maltolivine.**—This is an emulsion of Malt extract and olive oil prepared by Mr. Martindale, 10, New Cavendish Street, W.

**Marruben.**—This is the name given to a glycerin extract of red bone marrow prepared by Mr. Martindale, 10, New Cavendish Street, W.

**Mesotan.**—We described this remedy, which is a great improvement upon gaultheria oil, in our last issue. It is necessary to mention that it should not be rubbed into a joint with any force, and the site of inunction should be changed frequently, as it is likely to set up some dermatitis. It is made by the Bayer Co., Ltd., 19, St. Dunstan's Hill, E.C.

**Paraffin Wax.**—We have examined a specimen of sterilized paraffin wax, introduced by Mr. Frank A. Rogers, of 327, Oxford Street, W., for purposes of subcutaneous injection, and find it well suited for its purpose.

**Phenol-Pthalen.**—This new laxative, which appears to be both efficient and harmless, is becoming very popular with the profession. Messrs. R. Sumner & Co., of Liverpool, put up tablets containing 2½ grs., at 1/6 per ounce. The dose for children is one or two; for adults double this number may be given.

**Pilewort Ointment and Suppositories.**—An ointment made from the fresh plant of ranunculus ticana, is recommended by Mr. James Sawyer as an effectual remedy for hæmorrhoids. Messrs. R. Sumner & Co., of Liverpool, prepare this, and also make suppositories, but their supply is exhausted until the spring. It is important that it should be made from the fresh plant.

**Rheumasan.**—This contains some proportion of salicylic acid, and is used as an application for rheumatism, neuralgia, and sciatica by some German physicians. This together with Ester-Dermasan and Vaginal-Kepseln, introduced into this country by Messrs. Chas. Zimmermann & Co., 9 and 10, St. Mary-at-Hill, E.C. we must reserve for consideration until our next issue, when we hope to be in a better position to report upon their merits.

**Sanitas.**—A number of experiments have been recently made by Dr. John Thresh, D.Sc. (Lond.), and D.P.H. (Camb.), respecting the germicidal effects of Sanitas preparations, and his results are of great professional interest. He found that a 20 per cent solution of "Sanitas Fluid" killed the typhoid bacillus in 2½ to 5 minutes, while a 7½ per cent of Sanitas Emulsion killed it in less than 2½ minutes. It required pure Sanitas Fluid to kill the diphtheria bacillus in less than one minute, a 40 per cent solution taking 15 to 20 minutes, and a 10 per cent solution of the emulsion less than 2½ minutes. Pure Sanitas Fluid kills the anthrax bacillus in 2½ minutes, and a 10 per cent solution of Sanitas Emulsion in the same time. These results prove that the claims put forward by the "Sanitas" Co., Lim., of London, have been well grounded, and when we remember its non-poisonous and pleasant character, it is difficult to find amongst more recently introduced antiseptics anything which can be used with greater confidence by the practitioner.

**Savaresse's Capsules.**—These are envelopes of animal membrane instead of gelatin, and are intended for the administration of such drugs as ol. santal flav. It is claimed that the inner of the two membranes of which the capsule is composed rarely bursts until it reaches the small intestine. Messrs. Evans, Sons, Lescher & Webb put up ol. santal flav. in these capsules, and it is found that the patient's breath does not become tainted as with the ordinary santal oil flavour.

**Soft Soap, Germicidal.**—This is a modification of germicidal soap (McClintock). The latter is a hard soap containing 2 per cent mercuric iodide, while the soft soap contains 1 per cent iodide only. It is supplied in collapsible tubes, and is thus particularly convenient for use by the surgeon before and after operations, and by the physician in gynæcological practice. The saponaceous material is scientifically adapted to develop the maximum energy of the germicide, and, at the same time, act as a mild yet efficient detergent. Messrs. Parke, Davis & Co. are the makers.

**Suprarenalin.**—A most efficient method of keeping this substance is in the form of tablets, as solutions tend to oxidize. Messrs R. Sumner & Co., put up tablets, one of which in 15 minims of water represents a 1–1000 solution. They supply twenty of them in a tube for 2/-.

*Fig.* 93.

**Syrupus Iodo-Tannicus.**—Each drachm contains 2 grains of iodine in loose combination with tannin, syrup, and flavourings. It has been used in the treatment of enlarged tonsils and adenoids. It is prepared by Mr. W. Martindale, 10, New Cavendish Street, W. (*Fig.* 93).

**Theocin-Sodium Acetate.**—This is a double salt consisting of equal molecules of theocin-sodium and sodium-acetate. It is soluble to the extent of 4½ per cent in water. It has been used with great success by Dr. J. Meonertz at the Charlotteburgh Hospital as a diuretic, especially serviceable in cases of cardiac dropsy. With the exception of occasional vomiting and nausea, no ill effects were observed. It is manufactured by the Bayer Co., Ltd., 19, St. Dunstan's Hill, E.C.

**Thiol.**—This is a new coal-tar product of great interest, prepared by a process patented by Mr. J. D. Reidel, of Berlin. It is a brownish-black liquid of neutral reaction, with a smell rather like Russian leather. It is soluble in water, glycerin, and alcohol. When applied to the skin it dries like a varnish, and when this is washed off the skin remains slightly discoloured. It appears to exercise a soothing effect on eczematous and raw places on the skin, and promotes the formation of a horny, protective layer of skin. It has not been found to cause irritation, and may be used in all skin diseases where a dermative and astringent effect is desired. It is well worth an extended trial by our readers. Messrs. Woolley, Sons & Co., of Manchester, prepare a thiol and zinc paste, which contains 10 per cent of the former and 20 per cent of the latter. This has been found useful as a soothing application in many irritable conditions of the skin. They also prepare an excellent soap containing 5 per cent of thiol, which we think one of the best for cases where there is any form of dermatitis.

**Ung. Resorcin Co.**—This, a combination of resorcin, zinc, and bismuth, with suitable emollients, put up by Messrs. Woolley, Sons & Co., of Manchester, is an ideal application for irritable skins, as it rubs in without leaving a greasy surface. We have tried it with excellent results in cases of pruritus and dry eczema.

**Vaginal Douche Tablets.**—Messrs. R. Sumner & Co., of Liverpool, now put up tablets of sulphocarbolate of zinc, one of which, dissolved in a pint of water, makes an excellent lotion for a vaginal douche. We have previously mentioned the great advantage of this method of dispensing lotions for douches, etc. These cost in bulk 3/6 per lb.

## DIETETIC ARTICLES.

**"Atora" Beef Suet.**—This is English beef suet submitted to a refining process by which all waste tissue and water is removed. It is claimed to be more economical than ordinary suet, about one-third less being required, and it has also the advantage that it requires no chopping, and mixes with the flour more thoroughly and evenly than is possible when the suet is bound up by the cellular tissue. It can be obtained from Messrs. Hugon & Co., Ltd., of Pendleton, Manchester, and is well worth trying, especially in hospitals and large institutions, where the saving of labour alone would be of material consequence.

**Cocoa.**—We have recently examined a specimen of Van Houten's Cocoa, and have been very much surprised at its great solubility, and how small is the quantity required to make a breakfastcupful. In this fact lies the difficulty, because almost invariably too much is used, with the result that cocoa has come to be regarded as a rather heavy drink in comparison with tea. With such a cocoa as Van Houten's, less than half a teaspoonful should be used to half-a-pint of water, and the result is a light refreshing beverage, stimulating, and easily digestible. It might be well to caution nurses on the point, because patients soon acquire a distaste for cocoa when too much is put into the cup.

**Cognac.**—It is quite customary to speak of brandy as impossible to procure genuine and unsophisticated. As a matter of fact, Messrs. Gautier Frères, of Cognac, supply nothing else, and have been doing so since the year 1755. For invalids and for medical purposes they recommend a "Fine Liqueur," which they guarantee to be twenty years old. This costs 6/8 a bottle, but they have good "Old" brandy, not so old, at 58/- per dozen. We mention this because it shows that it is not necessary to pay an exorbitant price to obtain a genuine brandy. Messrs. Brown, Gore & Co., of 22 and 23, Great Tower Street, E.C., are the British agents.

**Milk and Cereal Diet.**—Messrs. Allen and Hanburys Ltd., Lombard Street, E.C., prepare a food consisting of pancreatized milk and cereal. It is easily prepared by the simple addition of boiling water, and being very palatable, and quickly digested, it forms a very suitable food for invalids.

**Roborat Food.**—This is a vegetable albumen made exclusively from wheat, and we believe from the careful experiments by eminent German physicians and chemists, that it must be counted as one of the most valuable foods we possess. It contains a large amount of lecithin, a phosphoric compound which is the basis of yolk of egg and of nerve tissue, and both theoretically and clinically Roborat has been found invaluable in restoring nervous energy, and in helping to build up the tissues in all wasting diseases. Some proof of this is afforded by the fact that, under its administration, the number of red blood corpuscles increases, and that anæmic patients improve rapidly from its use. It is practically tasteless, and occurs in the form of an impalpable powder, which when taken in its crude form has the flavour of wheat. Tested against the food preparations made from milk, by eminent German experts, it was in each case given the preference, and there is one strong point in its favour, that it is sufficiently inexpensive to enable it to be used freely in hospital practice. We have decided to give it a more extended trial during the present year, as we find that our patients like it, and appear the better for it. It is prepared by the Roborat Co., Moulton Street, Strangeways, Manchester.

**Sanatogen.**—This may be described as a glycero-sodio-phosphate of casein, and is made from milk casein. It is more soluble than the majority of albuminous preparations, and has a more agreeable taste and smell. Our friend Prof. Ewald, of Berlin, has given it an extensive trial, and speaks highly of it in enteric fever, and recommends its use for the purpose of increasing the nutritive value of a given diet in all cases of physical weakness, especially in those of a chronic nature, as well as in the acute stages of all those maladies which are accompanied by high rise of temperature. We believe it to be a very valuable preparation, but the price stands in the way of its extensive use in hospital practice.

# BOOKS OF THE YEAR.

A List of the Principal Medical Works and New Editions Published during 1904.

*** *For the convenience of our readers any of the works in this list can be obtained from Messrs. J. Wright & Co., "Medical Annual" Offices, Bristol.*

## AMBULANCE AND NURSING.

Ambulance: Manual of. By J. Scott Riddell. 5th ed., revised and enlarged. Illustrated. Cr. 8vo, pp. 244. *Griffin* - - - 4*s.*

Ambulance Tablets: Practical. By Sydney Partridge, M.D. 5th ed. *Churchill* - - - - - - - - - - - *Net* 1*s.*

Consumption: Modern Nursing of. By Dr. Jane H. Walker. 8vo. *Scientific Press* - - - - - - - - - *Limp, Net* 1*s.*

Dictionary: Nurse's. By Honor Morten. 5th ed. With Phonetic Pronunciations. Revised by Mary I. Burdett. 16mo. *Scientific Press.* 2*s.*

District Nursing Association: Hints on How to Start a. By a County Superintendent. 8vo. pp. 20. *Scientific Press* - - - *Net* 1*s.*

First Aid: Manual of. Being a Text-book for Ambulance Classes and a Work of Reference for Domestic and General use. By J. A. Austin. Illustrated. Cr. 8vo, pp. 216. *Low* - - - *Boards,* 1*s.*

Nursing Guide. Handbook of Nurses' League, and Register of Nurses Trained at Guy's Hospital, 2nd issue. Cr. 8vo, pp. 141. *Ash* 1*s.* 6*d.*

Nursing: Manual of Medical and Surgical. By Laurence Humphry. 27th ed. Cr. 8vo, pp. 268. *Griffin* - - - - - - - 3*s.* 6*d.*

Nursing: Practical. By Isla Stewart and Herbert E. Cuff. New ed. Cr. 8vo, pp. 444. *W. Blackwood* - - - - - - - *Net* 5*s.*

Nursing: Practical Points in, for Nurses in Private Practice. By Emily A. M. Stoney. With an Appendix. 3rd ed., revised. 8vo, pp. 466. *Saunders* - - - - - - - - - - - *Net* 7*s.* 6*d.*

Stretcher Drill, Illustrated, including the New Hand-seat, Wagon, and Railway Wagon Drills. By Major J. J. de Z. Marshall, R.A.M.C.V. 2nd ed. *Churchill* - - - - - - - - - - *Net* 3*s.*

## ANATOMY AND PHYSIOLOGY.

Anatomical Model of the Female Human Body. By W. S. Furneaux. With 16 pages of explanatory text. *Baillière* - - - *Net* 4*s.*

Anatomy: Treatise on Applied. By Edward H. Taylor. Illustrated. Roy. 8vo, pp. 766. *Griffin* - - - - - - - *Net* 30*s.*

Anatomy and Histology: Handbook of Pathological. By F. Delafield. 7th ed. 13 Plates and 453 Illustrations. 8vo, pp. 840. *Baillière. Net* 21*s.*

Head and Neck: Surgical Anatomy of. By J. B. Deaver, M.D. 177 Plates Roy. 8vo. *Rebman* - - - - - - - - - *Net* 52*s.* 6*d.*

Histology: Text-book of. By P. Stöhr, M.D. 5th American ed. 353 Illustrations. Roy. 8vo, pp. 432. *Rebman* - - - - *Net* 14*s.*

Human Anatomy: Hand Atlas of. By W. Spalteholze and others. Vol. III. Roy. 8vo. *Williams and Norgate* - - - - - *Net* 22*s.* 6*d.*

Human Physiology: Elements of. By Ernest H. Starling, M.D. 6th ed. 321 Engravings. *Churchill* - - - - - - - - 12*s.* 6*d.*

Human Physiology: Text-book of, including Histology and Microscopical Anatomy. By L. Landois. 10th revised and enlarged ed. With 394 Illustrations. Roy. 8vo, pp. 1027. *Griffin* - - - - *Net* 30*s.*

Human Sternum. By A. Melville Paterson. Three Lectures delivered at the Royal College of Surgeons, England, November, 1903. 10 Plates. 8vo, pp. 89. *Williams & Norgate* - - - - - - - *Net* 10*s.*

LANDMARKS AND SURFACE MARKINGS OF THE HUMAN BODY. By Louis Bathe Rawling, M.B., F.R.C.S., Asst. Surgeon St. Bart's Hosp. 24 Plates. 8vo, pp. 84. *H. K. Lewis* - - - - - - - - - *Net* 5s.

LYMPHATICS: Anatomy of the. By G. Delamere. Authorised English ed. Translated and edited by Cecil H. Leaf. With 117 Illustrations and Diagrams. Imp. 8vo, pp. 314. *Constable* - - - - - *Net* 18s.

MUSCLE AND NERVE: Biochemistry of. Ten Lectures. By W. D. Halliburton. Illustrated. 8vo, pp. 176. *Murray* - - - *Net* 7s. 6d.

NORMAL HISTOLOGY AND MICROSCOPICAL ANATOMY. By J. S. Ferguson. 8vo. *Appleton* - - - - - - - - - - - *Net* 21s.

PHYSIOLOGY: Elementary Practical. By John Thornton. Illustrated. *Practical Elementary Science Series.* Cr. 8vo, pp. 332. *Longmans* 3s. 6d.

PHYSIOLOGY: Handbook of. By W. D. Halliburton. 6th ed. Illustrated. 8vo, pp. 924. *Murray* - - - - - - - - - *Net* 15s

PHYSIOLOGY: Primer of. By E. H. Starling. 12mo, pp. 136. *Murray.* 1s.

PHYSIOLOGY: Text-book of for the use of Students. By A. P. Brubaker, M.D. Coloured Plates and 354 Illustrations. 8vo, pp. 699. *Rebman* *Net* 17s. 6d.

## BACTERIOLOGY.

BACTERIOLOGY AND THE PUBLIC HEALTH. By George Newman. 3rd ed. Roy. 8vo, pp. 518. *Murray* - - - - - - - - *Net* 21s.

BACTERIOLOGY: Clinical Diagnostic. Including Serum Diagnosis and Cytodiagnosis. By Alfred C. Coles, M.D. With Coloured Plates. 8vo, pp. 246. *Churchill* - - - - - - - - - *Net* 8s.

BACTERIOLOGY: Essentials of. By M. V. Ball, M.D. Being a Concise and Systematic Introduction to the Study of Micro-Organisms, for the use of Students and Practitioners. 4th ed., revised. Illustrated. *Essential Series.* Cr. 8vo, pp. 236. *Kimpton* - - - - - *Net* 4s.

BACTERIOLOGY OF EVERY-DAY PRACTICE. By J. Odery Symes, M.D. 2nd ed. *Medical Monograph Series.* Cr. 8vo. Pp. 108. *Baillière* *Net* 2s. 6d.

PHYSICIAN *versus* BACTERIOLOGIST. By O. Rosenbach. Cr. 8vo. *Funk and Wagnalls* - - - - - - - - - - *Net* 6s.

## CANCER.

CANCER OF THE BREAST AND ITS PREVENTION: Clinical Causes of. By C. H. Leaf. 8vo. *Constable* - - - - - - - - *Net* 2s.

CANCER PROBLEM IN A NUTSHELL. By Robert Bell, M.D. Cr. 8vo. *Baillière* - - - - - - - - - - - *Net* 1s.

HYPODERMIC MEDICATION IN THE TREATMENT OF INOPERABLE CANCER: Some Methods of. By John A. Shaw-Mackenzie, M.D. *Baillière* *Net* 1s,

MIDDLESEX HOSPITAL: Archives of the. Vols. I, II, and III. Reports from the Cancer Research Laboratories. Edited by A. G. R. Foulerton. Roy. 8vo. *Macmillan* - - - - - - - - *Net* 5s.

X-RAYS. Their Employment in Cancer and other Diseases. By Richard J. Cowen. Cr. 8vo, pp. 142. *Glaisher* - - - - - *Net* 2s. 6d.

## CHEMISTRY AND PHYSICS.

CHEMISTRY: Elements of. By M. M. Pattison Muir. 8vo, pp. 568. *Churchill* - - - - - - - - - - *Net* 10s. 6d.

CHEMICAL PHYSIOLOGY AND HISTOLOGY: Practical Exercises in. By H. B. Lacey and C. A. Pannett. 8vo. *Simpkin* - - - *Net* 2s.

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Burgess Hill (Sussex) — *St. George's Retreat*, Ditchling. Med. Off., Dr. John A. Cones. Access—Burgess Hill station. *See also p.* 789

Buxton.—*Wye House*. Res. Phys., F. K. Dickson, F.R.C.P., and T. G. Dickson, L.R.C.P. Access—Buxton.

Cambridge. – *County Asylum*, Fulbourn. Res. Med. Supt., E. C. Rogers, M.R.C.S. Acc.—Cambridge station, 3 miles.

Carlisle. —*County Asylum*. Res. Med. Supt., W. F. Farquharson, M.D. Access—Carlisle, 3 miles.

Carlow. —*District Asylum*. Res. Med. Supt., Dr. J. J. Fitzgerald. Access—Carlow, ¼ mile.

Carmarthen.—*Joint Counties Asylum*. Res. Med. Supt., Edwin Goodall, M.D., F.R.C.P. Access—Carmarthen, 2 miles.

Castlebar (Co. Mayo).—*District Asylum*. Med. Supt., Dr. G. W. Hatchell. Access—Castlebar, 1 mile.

Chartham (near Canterbury).—*Kent County Asylum*. Res. Med. Supt., G. C. FitzGerald, M.D. Access—Chartham station, 1 mile.

Cheadle. — *Manchester Royal Lunatic Hospital*. Res. Med. Supt., W. Scowcroft, L.R.C.P., M.R.C.S. Access—Cheadle, 2 miles.

Chester.—*Cheshire County Asylum*. Res. Med. Supt., A. Lawrence, M.D. Station, 1½ miles.

Chichester.—*West Sussex County Asylum*. Res. Med. Supt., Dr. H. A. Kidd. Access—Chichester station, 1½ miles.

Church Stretton. — *Stretton House*, Shropshire (for gentlemen). Res. Med. Officer, Horatio Barnett, M.B. Access — Church Stretton station, 1 mile.

*The Grove House* (for ladies). Res. Prop. Mrs. McLintock. Res. Med. Supt., Dr. McLintock.

Clonmel.—*District Asylum*. Res. Med. Supt., Dr. Bagenal C. Harvey. Access—Clonmel, 1 mile.

Colchester.—*Eastern Counties Imbecile Asylum*. Res. Supt. and Sec., John J. C. Turner. Access—Colchester.

Cork —*District Asylum*. Accommodation for 1,300 patients. Res. Med. Supt., Oscar Woods, M.D. Access—Cork, 2 miles.

Cupar (Fifeshire). — *Fife and Kinross District Asylum*. Res. Med. Supt., A. R. Turnbull, M.B. Access—Springfield station.

Darlington (Durham).—*Dinsdale Park*. Res. Med. Supt., H. W. Kershaw, M.R.C.S. Access — Darlington, 5 miles; Dinsdale, 1 mile.

*See also p.* 779

Dartford.—*City of London Asylum*, near Dartford. Res. Med. Supt., Dr. E. W. White. Access—S. E. R. Dartford, 1½ miles.

Denbigh (N. Wales).—*North Wales Counties Asylum*. Med. Supt., Dr. Llewelyn F. Cox. Access—Denbigh, 1 mile.

Derby. — *Borough Asylum, Rowditch*. Res. Med. Supt., Dr. Macphail. Access—G.N.R. station, 1 mile; M.R. 2 miles. *See also p.* 789

*County Asylum*, Mickleover. Res. Med. Supt, R. Legge, M.D. Access Derby, M.R. 5 miles; Mickleover. G.N.R. 2 miles.

Devizes.—*Wilts County Asylum*. Res. Med. Supt., J. I. Bowes, M.R.C.S. Access—Devizes, 1 mile.

Dorchester. — *Dorset County Asylum*. Med. Supt., P. W. MacDonald, M.D. Access—Dorchester, 3 miles.

*See also p.* 784

Downpatrick —*District Asylum* (for 800 patients). Res. Med. Supt., M. J. Nolan, L.R.C.P.I. & L.M. Access—Downpatrick, 1 mile.

Drumcondra (Co. Dublin).—*Hartfield Retreat*. Med. Prop., Dr. Lynch. Vis. Phys., Dr. Matthew Burke Savage. Access—Dublin, 2 miles.

Dublin.—*Bloomfield*, Morehampton Rd. Med. Officer, H. T. Bewley, M.D. Access—Dublin, 1 mile.

*Farnham House and Maryville*, Finglas (for 56 patients, both sexes). Prop. and Res. Med. Supt., W. R. Dawson, M.D. Access—Cab from Dublin, 3 miles.

Consulting Rooms, 41, Upper Fitz-William Street, Dublin.

*Highfield* (for ladies), Drumcondra. *Hampstead* (for gentlemen), Glasnevin. Res. Med. Supt., Hy. M. Eustace, B.A., M.D. Access — By rail, Dublin. *See also p.* 792

*House of St. John of God*, Stillorgan. Res. Phys., Dr. P. O'Connell. Access — Stillorgan station, ½ mile; Dublin, 5 miles.

*Richmond District Asylum*. Res. Med. Supt., Dr. C. Norman.

*St. Patrick's Hospital.* James Street. Res. Med. Supt., Dr. R. R. Leeper. Assist. Med. Off., Dr. Parker, St. Edmundsbury. Branch at Lucan. Asst. Med. Off., Dr. A. Burrell.

*St. Vincent's Asylum*, Fairview. Vis. Med. Supts., Sir Francis R. Cruise, D.L., M.D., and John Murphy, F.R.C.P.I. Apply to the Superioress.

*Stewart Institution*, Palmerston, Chapelizod. Res. Med. Supt., F. E. Rainsford, M.D. Access — Kingsbridge station, 2½ miles.

*Verville*, Clontarf, near Dublin. Med. Prop., Dr. Lynch. Vis. Phys., Dr. M. B. Savage. Access—Dublin.

*Woodbine Lodge*, Rathfarnham, 6 miles (ladies). Prop., Mrs. Bishop. Med. Supt., Dr. A. Croly. Access—Rathfarnham tram, 2 miles.

**Dudley** (Stafford). —*Ashwood House*, Kingswinford. Props. Drs. Peacock and Pietersen. Res. Med. Supt., Dr. Pietersen. Access—Stourbridge Junc. 3½ miles, Dudley station, 4 miles; Wolv'rh'mpt'n, 7 miles. *See also p.* 789

**Dumfries.**—*Crichton Royal Institution.* Med. Supt , J. Rutherford, M.D. Access—Dumfries, 1 mile.

**Dundee.**—*Royal Asylum and District Asylum*, Liff. Res. Med. Supt., W. Tuach-Mackenzie, M.D. Access—Dundee, 3 miles; Liff, 1½ miles.

**Durham** —*County Asylum*, Winterton. Res. Med. Supt., Dr. W. St. J. Skeen, M.B. Access—Sedgefield station, 3 miles, by 'bus.

*Middleton Hall*, Middleton St. George, Co. Durham. Res. Licen., P. C. Smith, L.R.C.P. & S. Ed., L.F.P.S.G. Access –Dinsdale sta., 1 mile. *See also p.* 778

**Earlswood.** —*Training Home for the Feeble-minded and Imbecile* (Males 400, females 200). Res. Med. Supt., Dr. Charles Caldecott. Sec., 36 King William Street, E.C. Access—Earlswood sta., Red Hill Junc , 1½ miles. *See also p.* 784

**Edinburgh.**—*Mavisbank House*, Polton, Midlothian. Res. Med. Supt., G. R. Wilson, M.D. Access—Polton sta., N.B.R., 5 minutes' walk.

*Midlothian and Peebles District Asylum* (Patients, 350). Res. Med. Supt., R. B. Mitchell, M.D. Access—Rosslynlee station, 1 mile.

*Royal Edinburgh Asylum*, Morningside. Res. Phys. Supt., T. S. Clouston, M.D. Access—Edinburgh, 1½ miles.

*Saughton Hall.* Res. Med. Supt. and Prop., Sir J. Batty Tuke, M.D. Access—Princes St. station, 20 minutes.

**Elgin.**—*District Asylum.* Res. Supt., Alexander Hendry. Vis. Med. Off., J. W. N. Mackay, M.D. Access—Elgin, 1¼ mile.

**Ennis.** —*District Asylum.* Res. Med. Supt., Dr. F. O'Mara. Access—Ennis station, 1¼ miles.

**Enniscorthy** (Co. Wexford).—*District Lunatic Asylum.* Res. Med. Supt., Thos. Drapes, M.B. Access—Enniscorthy, 1 mile.

**Epsom** (Surrey).—*Church St.* (for 14 ladies). Res. Med. Supt., Dr. W. Clement Daniel. Access—L. & S. W.R., and L.B.S.C.R., 5 minutes.

**Exeter.**—*City Asylum*, Heavitree. Res. Med. Supt., R. L. Rutherford, M.D. Access—Exeter, 4 miles.

*Court Hall*, Kenton. Props., The Misses Mules. Vis. Phy., Dr. Lovely. Access—Starcross, 1 mile.

*Devon County Asylum*, Exminster. Med. Supt., Dr. Arthur N. Davis. Access—Exminster, 1¼ miles; Exeter, 4 miles.

*Wonford House* (Hospital for the Insane). Res. Med. Supt., P. Maury Deas, M.B., M.S. Lond. Access—Exeter station (Queen St.) 1½ miles; (St. David's), 2 miles. *See also p.* 787

**Fairford** (Gloucestershire).—*Retreat.* Res. Med. Prop., Dr. A. C. King-Turner. Access—Fairford.

*See also p.* 788

**Glasgow.**—*District Asylum*, Woodilee. Med. Supt., Hamilton C. Marr, M.D. Access—Lenzie station, 1 mile; Glasgow, 8 miles.

*District Asylum and Hospital for Mental Diseases*, Gartloch. Res. Med. Supt., W. A. Parker, M.B. Access—Garnkirk station.

*Govan District Asylum*, Hawkhead. Res. Med. Supt., Dr. W. R. Watson. Access—Crookston station.

*Kirklands Asylum*, Bothwell. Res. Med. Supt., James H. Skeen, M.B. Access—Bothwell & Fallside stations, ½ mile; Glasgow, 9 miles.

*Lanark County Asylum.* Med. Supt., Dr. N. T. Kerr. Access—Hartwood, 5 minutes.

*Royal Asylum*, Gartnavel. Res. Phys. Supt., Landel R. Oswald, M.B. Private patients only.

*Smithston Asylum*, Greenock. Med. Off., Jas. Laurie, M.B. Access—Greenock, about 1½ miles.

Gloucester.—*Barnwood House.* Res. Med. Supt., J. G. Soutar, M.B., C.M. Access—Gloucester, 2 miles.
*See also p.* 786
*Gloucester County Asylums*, Wotton and Barnwood, Gloucester. Res. Med. Supt., F. Hurst Craddock, M.A. Oxon., M.R.C.S. Access — Gloucester station, 1 mile.

Great Yarmouth.—*Royal Naval Hospital.* Apply Fleet Surgeon in charge. Access — Great Yarmouth station, 1 mile. For Naval patients only, admitted by Admiralty order.

Guernsey. — *St. Peter Port Asylum.* Med. Supt., E. V. Gibson, M.D.

Haddington. — *District Asylum*, 17 miles from Edinburgh. Med. Supt., J. Bruce-Ronaldson, M.D. Access —Haddington station, 10 minutes.

Hatton (near Warwick).—*County Asylum.* Res. Med. Supt., A. Miller, M.B. Access — Hatton station, 2 miles; Warwick station, 3 miles.

Hayward's Heath.—*Brighton County Borough Asylum.* Res. Med. Supt., Edward B. C. Walker, M.D. Access—Hayward's Heath, 1½ miles.

Hellingly.—*East Sussex County Asylum.* Med. Supt., F. R. P. Taylor, M.D.
*See also p.* 778

Henley-in-Arden (Warwickshire).—*Glendossil* (for both sexes). Res. Prop., Dr. S. H. Agar. Access—Henley-in-Arden, G.W.R., ½ mile.

Hereford.—*County and City Asylum.* Res. Med. Supt., C. S. Morrison, L.R.C.P. Ed. Access — Hereford, 3 miles.

Hitchin (Herts), near.—*Three Counties Asylum.* Res. Med. Supt. S. E. de Lisle, L.R.C.P.I. Access — Three Counties station, 1 mile.

Hull—*City Asylum.* Res. Med. Supt., J. Merson, M.D. Access—Willerby station, 1 mile.

Inverness — *District Asylum.* Med. Supt., R. B. Campbell, M.B. Asst. Med. Off., P. Shaw, L.R.C.P. Access—Inverness, 2½ miles.

Ipswich — *Borough Asylum.* Med. Supt., Dr. E. L. Rowe. Access—Ipswich, 2 miles.

Isle of Man.—*Lunatic Asylum*, Union Mills. Med. Supt., W. Richardson, M.D. Access—Douglas, 3 miles.

Isle of Wight.—*The County Asylum*, Carisbrooke. Res. Med. Supt., Harold Shaw, M.B. Access—Blackwater, ¾ mile; Newport, 2½ miles. Private Patients received.

Isleworth (Middlesex).—*Wyke House* Res. Prop., Dr. F. Murchison. Access—Isleworth, Brentford, Osterley station, 1 mile.

Ivybridge—*Plymouth Borough Asylum.* Res. Med. Supt., W. H. Bowes, M.D. Access — Wrangaton, G.W.R., 1½ miles; Ivybridge, 3 miles.

Jersey—*The Grove.* Res. Med. Prop., F. N. Gaudin, M.R.C.S. 2½ miles from St. Heliers, 2 from St. Aubin's.
*Jersey Asylum.* Med. Supt., Julius Labey, M.R.C.S., &c.

Kilkenny—*District Asylum.* Res. Med. Supt., G. F. West, L.R.C.P. Access —Kilkenny, ½ mile.

Killarney. — *District Asylum.* Res. Med. Supt., Dr. L. T. Griffin. Asst. Med. Off.,, E. W. Griffin, M.D. Access—Killarney, ½ mile.

Kirkby Lonsdale.—*Greta Bank.* Res. Licensee, Mrs. Taylor. Access—Bentham (M.R.) 2 miles.

Kirkintilloch (near Glasgow). — *Westermains Private Asylum.* For ladies; quiet cases only received. Apply to Mr. Lawrie, Res. Proprietor.
*See also p.* 785

Knowle (near Fareham). — *County Asylum.* Med. Supt., T. B. Worthington, M.D.

Lancaster. — *County Asylum.* Res Med. Supt., David M. Cassidy, M.D., D.Sc. Access—Lancaster, L. & N.W. and Midland stations, each 1¼ miles.

Leeds (Menston, near).—*West Riding Asylum.* Res. Med. Supt., Dr. McDowall. Access—Menston, 1 mile.

Leek (Stafford). — *County Asylum*, Cheddleton. Med. Supt., W. F. Menzies, M.D. Access—Wall Grange station, 1 mile.

Leicester. — *Borough Asylum.* Res. Med. Supt., J. E. M. Finch, M.D. Access—Leicester.
*Leicestershire and Rutland Asylum.* Res. Med. Supt., R. C. Stewart, M.R.C.S. Access—Leicester Town, 1 mile.

Letterkenny and Londonderry. — *Donegal District Asylum.* Res. Med. Supt., E. E. Moore, M.D. Asst. Med. Off., J. C. Martin, L.R.C.S.I. Access — Letterkenny and Lough Swilley Rly. 1 mile.

Lichfield. — *County Lunatic Asylum*, Burntwood, near Lichfield. Res. Med. Supt., J. B. Spence, M.D. Access — Lichfield City, 3½ miles; Trent Valley, 4½ miles; Hammerwich, 1½ miles.

Limerick.—*District Asylum*. Res. Med. Supt., Dr. E. D. O'Neill. Access—Limerick station, ½ mile.

Lincoln.—*County Asylum*, Bracebridge. Med. Supt., Dr. G. Parsons Torney. Access—2½ miles from station.

*The Lawn*. Res. Med. Supt., Arthur P. Russell, M.B. Access—Lincoln, 1 mile. *See also p.* 787

Liverpool.—*Shaftesbury House*. Near Liverpool and Southport. Res. Med. Supt., Stanley A. Gill, B.A., M.D., M.R.C.P. Lond. Access — Formby station, ¼ mile distant.

*Tue Brook Villa*, Liverpool, E. Res. Med. Supt., Dr. J. A. Cooke. (For 52 males and females). Access—Tue Brook station or Green Lane car.

London.—*Bethlem Royal Hospital*, St. George's Road, London, S.E. Res. Med. Supt., Theo. B. Hyslop, M.D., M.R.C.P.E. *See also p.* 782

*Bethnall House*, Cambridge Road, N.E. Res. Med. Supt., J. K. Will, M.D. Access — Cambridge Heath station.

*Brooke House*, Upper Clapton. Props., Mr. H. T. Monro and Dr. J. O. Adams. Res. Med. Supt., Dr. J. O. Adams. Access—Clapton.

*Camberwell House*, Peckham Road, S.E. Res. Med. Supt., Francis H. Edwards, M.D., M.R.C.P. Asst. Med. Offs., Henry C. E. Quin, L.R.C.S. and E. H. Griffin, B.A., L.S.A. *See also p.* 786

*Chiswick House*, Chiswick. Lics., Dr. T. S. Tuke; Res., C. M. Tuke. Access—Chiswick station, ½ mile; Turnham Green station, ¾ mile.

*Clarence Lodge*, Clapham Park, S.W. Lic., Miss F. Leech. Med. Off., Dr. G. F. Blandford. Access—Clapham Rd., and Clapham Common (Electric), 15 minutes.

*Featherstone Hall*, Southall. Res. Med. Lic., Dr. W. H. Bailey. Access—Southall station, 5 minutes.

*Fenstanton*, Christchurch Road, Streatham Hill. Res. Med. Supt., Dr. J. R. Hill. Access—Tulse Hill, 5 minutes, & Herne Hill, 15 minutes. *See also p.* 787

*Flower House*, Catford, S.E. Res. Med. Supt., C. A. Mercier, M.B. Access—C. & D. R. Beckenham Hill, 5 minutes.

*Grove Hall*, Bow (both sexes). Med. Lics., Mr. Byas and Dr. Mickle. Access—Bow Road and Bow stations, ⅛ mile.

*Halliford House*, Sunbury-on-Thames, S.W. Res. Med. Supt., W. J. H. Haslett, M.R.C.S. Access—Sunbury station, 1¼ mile.

*Hayes. Wood End House* (ladies). Uxbridge, 3 miles, London 12 miles. Med. Lic., Dr. H. Stilwell. Access—Hayes station, 1 mile.

*Hayes Park*, Hayes, Middlesex, near Uxbridge. Res. Med. Off., Dr. J. W. Higginson. Access—Hayes, 2 miles.

*Hendon Grove Asylum* (for ladies), Hendon. Med. Lic., F. W. Edridge-Green, M.D., F.R.C.S.. Access—By M.R., Hendon station, ½ mile, or 'bus from Swiss cottage, St. John's Wood, N.W.

*London County Asylum*, Banstead Downs, near Sutton, Surrey. Res. Med. Supt., D. J. Jones, M.D. Access—Belmont station, ½ mile; Sutton station, 1½ miles.

*London County Asylum*, Bexley, Kent. Res. Med. Supt., T. E. K. Stansfield, M.B. Access—Bexley station, 1¼ miles.

*London County Asylum*, Cane Hill, Purley, Surrey. Res. Med. Supt., Dr. J. M. Moody. Access—Coulsdon S.E.R., or Stoat's Nest, L.B. & S.C.R., 10 minutes.

*London County Asylum*, Claybury, Woodford, Essex. Res. Med. Supt., Robert Jones, M.D. Access—Woodford, 1½ miles

*London County Asylum*, Colney Hatch, N. Res. Med. Supt., W. J. Seward, M.B. Access—New Southgate, G.N.R.

*London County Asylum*, Hanwell, W. Res. Med. Supt., R. R. Alexander, M.D.

*London County Asylum*, Horton, near Epsom. Med. Supt., Dr. F. Bryan.

*Middlesex County Asylum*, Tooting, S.W. Med. Supt., H. G. Hill, M.R.C.S. Access — Wandsworth Common station, 1 mile.

*Moorcroft House*, Hillingdon (males). Uxbridge, 2 miles; London, 13 miles. Med. Licensees, Dr. Stilwell, and Dr. R. H. Cole. Access — West Drayton, 2 miles.

*Newlands House*, Tooting Bec Road, S.W. (for gentlemen). Lic. Prop., A. H. Sutherland. Med. Supt., H. J. Hind, M.R.C.S. Access—Balham station, 1 mile, and tram. *See also p.* 785

*Northumberland House*, Green Lanes, N. Prop., A. H. Stocker, M.D. Res. Med. Supt., Dr. Frank R. King. Access—Finsbury Park sta., 1 mile.

*See also p.* 788

*Otto House*, 47, North End Road, West Kensington (for ladies). Lic. Prop., A. H. Sutherland. Lady Supt., Mrs. Chapman. Access — West Kensington station, 1 mile.

*See also p.* 785

*Peckham House*, Peckham, S.E. Prop., Alonzo H. Stocker, M.D. Res. Med. Supt., Harold C. Halsted, M.D. Access—Peckham Rye sta., 10 minutes' walk. *See also p.* 787

*St. Luke's Hospital*, Old St., E.C. Res. Med. Supt., Wm. Rawes, M.D., F.R.C.S. Convenient to all principal London stations. *See also p.* 782

*The Priory*, Roehampton, S.W., near Richmond. Res. Med. Supt., James Chambers, M.D. Access—Barnes station, 10 minutes.

*Vine Cottage*, Norwood Green, Middlesex. Res. Med. Prop., H. C. Titterton, M.R.C.S. Access—Southall, 1 mile

*West Ham Boro' Asylum*, Goodmayes, Ilford. Res. Med. Supt., Dr. D. Hunter. Access — Goodmayes, ¾ mile.

**Londonderry.**—*District Asylum* Res. Med. Supt., Dr. Hetherington Access—Londonderry, 1 mile.

**Macclesfield.**—*Parkside Asylum.* Res. Med. Supt., T. Steele Sheldon, M.B., Lond. Access—Macclesfield, 1 mile.

**Maidstone.**—*Kent County Asylum.* Res. Med. Supt., H. W. Lewis, M.D. Access—Maidstone station, 1½ miles.

*West Malling Place* (for ladies). Castle House and Winthies Cottage (for gentlemen). Res. Med. Supt., Dr. James Adam. Access—Malling station, 1 mile.

**Market Lavington (Wilts).**—*Fiddington House.* Prop., Major Reilly. Res. Med. Supt., Dr. J. Selfe Lush. Access—Lavington, 1½; Devizes, 6 miles.

**Maryborough (Queen's County).** — *District Asylum.* Res. Med. Supt., Dr. J. H. Hatchell. Access—Maryborough, ½ mile.

**Melrose, N.B.**—*Roxburgh District Asylum.* Res. Med. Supt., J. C. Johnstone, M.D. Access—Melrose, 1 mile.

**Melton.**—*Suffolk County Asylum*, near Woodbridge. Res. Med. Supt., J. R. Whitwell, M.B. Access—Melton sta., 1¼ miles; Woodbridge sta., 2¼ miles.

**Middlesboro'.**—*County Boro' Asylum.* Res. Med. Supt., Dr. G. S. Pope. Access—Middlesboro', 2 miles.

**Monaghan (Ireland)**—*District Asylum.* Res. Med. Supt., Dr. Edwd. Taylor. Access—Monaghan, ¼ mile.

**Montrose, N. B.** — *Montrose Royal Lunatic Asylum.* Phys. Supt., John G. Havelock, M.D. Access—Hillside, ¼ mile; Dubton, 1 mile.

**Morpeth.**—*Northumberland County Asylum.* Res. Med. Supt., Thos. W. McDowall, M.D. Access—Morpeth station, 1 mile, by 'bus.

**Mullingar.** — *District Asylum.* Res. Med. Supt., Dr. A. Finegan. Access—Mullingar station, 1 mile.

**Newcastle-on-Tyne.**— *City Asylum*, Gosforth. Res. Med. Supt., James T. Callcott, M.D. Access — Newcastle, 4 miles.

**Newton-le-Willows, near, (Lanc.)**— *Haydock Lodge Asylum.* Med. Prop., E. H. Beaman, M.R.C.S. Edin. Res. Med. Supt., Dr. C. T. Street. Access—Newton-le-Willows station, L. & N.W.R., 2 miles.

**Northampton.** — *Berrywood Asylum.* Res. Med. Supt., W. Harding, M.D. Access — Castle station, 2½ miles; Midland station, 3 miles.

*St. Andrew's Hospital.* Med. Sup., J. Bayley, M.R.C.S. Access — Northampton station, 1 mile.

**Norwich.**—*Heigham Hall.* Res. Phys. and Prop., J. G. Gordon-Munn, M.D. Med. Off., Dr. A. McWilliam. Access—Victoria station, 1 mile; Thorpe station, 1½ miles.

*Norfolk County Asylum*, Thorpe (1000 beds). Res. Med. Supt., D. G. Thomson, M.D. Access—Whitlingham stat., 1 mile; Norwich, 2½ miles.

*Norwich City Asylum*, Hellesdon, near Norwich. Res. Phys. and Supt., Wm. Harris, M.D. Asst. Med. Off., Dr. A. Sykes. Acc.–Hellesdon, 1 mile.

*The Bethel Hospital for the Insane.* Res. Med. Supt., J. Fielding, M.D. Cons. Phys., Saml. J. Barton, M.D. Access—Thorpe station, 1 mile.

*See also p.* 780

**Nottingham.**—*City Asylum*, Mapperley Hill. Med. Supt, E. Powell, M.R.C.S.

*Notts County Asylum.* Med. Supt., A. M. Jackson, M.D. Access—Radcliffe-on-Trent, 2 miles.

*The Coppice.* Res. Med. Supt., W. B. Tate, M.D. Access—Midland station, 2½ miles; Gt. Northern and Gt. Central station, 1½ miles.

**Omagh.**—*District Asylum.* Res. Med. Supt., Geo. E. Carre, M.B. Access—Omagh station, 1½ miles.

**Oxford.**—*Oxford County Asylum.* Res. Med. Supt., R. H. H. Sankey, M.R.C.S. Access—Littlemore sta.

*The Warneford,* Oxford, 1½ miles (for private patients only). Res. Med. Supt., James Neil, M.D. Access—Oxford station, 2¼ miles.

*See also p.* 785

**Paisley.**—*Parochial East Asylum.* Med. Supt., T. Graham, M.D. Access—Paisley, 1 mile.

*Parochial Asylum,* Riccartsbar. Med. Off., D. Fraser, M.D. Access—Paisley West, ¼ mile.

**Perth.**—*District Asylum,* Murthly. Res. Med. Supt., Lewis C. Bruce, M.D. Access—Murthly.

*James Murray's Royal Asylum,* Perth (for private patients only). Phys. Supt., A. R. Urquhart, M.D., F.R.C.P. Ed. Access—Perth, under 2 miles. *See also p.* 788

**Plympton.** — *Plympton House,* Plympton, South Devon. Res. Med. Supt., Dr. Alfred Turner. Access—Plympton, 1 mile; Marsh Mills, 2 miles; Plymouth, 5 miles.

*See also p.* 786

**Portsmouth.**—*Borough Asylum.* Res. Med. Supt., B. H. Mumby, M.D., D.P.H. Access—Fratton, 1½ miles.

**Prestwich (near Manchester).** — *County Asylum.* Res. Med. Supt., Dr. F. Perceval. Acc.—Prestwich, 1 mile.

**Rainhill (near Liverpool).** — *County Asylum.* Res. Med. Supt., J. Wigles-worth, M.D. Access — St. Helens, 2½ miles; Rainhill, 1 mile.

**Rotherham (Yorkshire).**—*Thunder-cliffe Grange,* 5 miles from Sheffield (for ladies). Con. Phys., W. C. Clapham, M.D. Res. Phys., G. E. Mould, M.R.C.S., L.R.C.P. Access—Grange Lane station, ¼ mile.

*See also p.* 777

**Salisbury.** — *Fisherton House Asylum.* Med. Supt., W. C. Finch, M.D. Access—Salisbury station, 5 minutes.

*See also p.* 780

*Laverstock House.* Med. Supt., Res. Lic., Hy. J. Manning, M.R.C.S. Access—Salisbury, 1½ miles.

**Shrewsbury.** — *Salop & Montgomery Counties Asylum.* Res. Med. Supt., D. F. Rambaut, M.D. Access—Shrewsbury station, 2½ miles

**Sleaford.** — *Kesteven County Asylum.* Med. Supt., J. A. Ewan, M.D.

**Sligo.** — *District Asylum.* Res. Med. Supt., Dr. Joseph Petit. Access—Sligo station, 1½ miles.

**Stafford.**—*County Asylum.* Res. Med. Supt., Dr. J. W. S. Christie. Access—Stafford, 1 mile.

*Institution for the Insane,* Coton Hill. Res. Med. Supt., Dr. R. W. Hewson. Access—Stafford, 1 mile.

*See also p.* 783

**Starcross (near Exeter).** — *Western Counties Idiot Asylum.* Res. Supt., E. W. Locke. Access—Starcross station, 5 minutes.

**Stirling.**—*District Asylum.* Med. Supt, Dr. George M. Robertson. Access—Larbert, 1½ miles.

**St. Albans (Hill End).**—*Herts County Asylum.* Med. Supt., A. N. Boycott, M.D. Access—Hill End station, G.N.R., 2 minutes.

**St. Leonards-on-Sea.**—*Ashbrook Hall,* Hollington (for ladies). Res. Props., Mrs. Hitch and Miss Adams. Med. Supt., Dr. E. Kaye Smith. Access—Warrior Square station, 2 miles.

**Stone (near Aylesbury).** — *Bucks County Asylum.* Res. Med. Supt., J. Humphry, M.R.C.S. Access—Aylesbury station, 3¼ miles.

**Sutton (Surrey).** — *Chalk Pit House* (licensed for 3 lady patients). Prop., F. D. Atkins, M.R.C.S.

**Tamworth (Staffs.).**—*The Moat House* (for ladies). Res. Prop., E. Hollins, M.A. Med. Attnds. J. Holmes Joy, M.D., and C. H. Joy, M.D. Access—Tamworth, ¾ mile.

**Taunton.** — *Somerset & Bath Asylum,* Cotford, near Taunton. Res. Med. Supt., Mr. H. T. S. Aveline. Access—Norton Fitzwarren station, 2 miles.

**Ticehurst (Sussex).**—*Asylum.* Props., Drs. H. & A. Newington. Access—Ticehurst Road 3 miles, Wadhurst S.E. & C. R., 4 miles.

**Tonbridge.** — *Redlands.* Res. Med. Supt., W. A. Harmer. Access—Tonbridge junc., S.E. & C.R., 2½ miles.

**Virginia Water.** — *Holloway Sanatorium,* Hospital for the Insane. St. Ann's Heath. Res. Med. Supt., W. D. Moore, M.D. Asst. Med. Offs., W. Tinker, L.R.C.P., T. E. Harper, L.R.C.P., Rosina C. Despard, M.D., G. W. Smith, M.B. Access — Virginia Water station, 5 mins. Seaside Branch, Hove Villa, Dyke Road, Brighton. Med. Off., E. N. Edwards, M.R.C.S.

*See also p.* 784

Wadsley (near Sheffield). — *South Yorkshire Asylum*. Res. Med. Supt., W. S. Kay, M.D. Access—Wadsley Bridge, 1 mile.

Wakefield.—*West Riding Asylum*. Res. Med. Supt. and Director, W. B. Lewis, L.R.C.P., M.R.C.S. Access—Kirkgate and Westgate stat., 1 mile.

Wallingford (Berks).—*Berkshire Asylum*.—Res. Med. Supt., J. W. A. Murdoch, M.B. Access — Cholsey, 1 mile.

Warwick.—*Midland Counties Asylum*, Knowle, near Birmingham (for feeble-minded children). Sec. and House Gov., A. H. Williams. Med. Off. R. H. Foster, M.R.C.S. Access—Knowle, ½ mile.

Waterford. — *District Asylum*. Res. Med. Supt., J. A. Oakshott, M.D. Access — Waterford and Kilkenny station, 2 miles.

*St. Patrick's Inst.*, Belmont Park. Conducted by the Brothers of Charity. Med. Supt., W. R. Morris, M.B.

Wells. — *Somerset and Bath Asylum*, Wells, Som. Res. Med. Supt., C. F. Laing, M.B. Access—Wells, 2 miles; Masbury, 2½ miles.

Whitchurch (Salop).—*St. Mary's House* (ladies only). Res. Med. Supts., S. T. Gwynn, M.D., & C. H. Gwynn, M.D. Access—Whitchurch, 1 mile.

Whitefield (near Manchester.) — *Overdale*. Res. Med. Supt., J. Holmes, M.D. Access—Prestwich and Whitefield station, 1½ miles; Molyneux Brow, ¼ mile.

Whittingham (nr. Preston).—*County Asylum*. Res. Med. Supt., Dr. J. F. Gemmel. Access—Grimsargh station, 1¾ miles; Whittingham station, 3 minutes.

Winchelsea (Sussex).—*Periteau House*, near Hastings (5 ladies). Prop., Mrs. R. V. Skinner. Med. Supt., E. W. Skinner, M.D. Access—Winchelsea station, 1 mile.

Witham (Essex). — *The Asylum* (Licensed for both sexes). Apply to the proprietor.

Woking.—*Surrey County Asylum* Brookwood. Res. Med. Supt., Dr. J. E. Barton. Access—Brookwood station, 1¼ miles.

Worcester.—*County & City Lunatic Asylum*, Powick. Res. Med. Supt., Dr. G. M. P. Braine-Hartnell. Access — Worcester station, 4 miles.

York.—*The Pleasaunce*, Heworth Moor (ladies only). Prop. & Med. Supt., G. I. Swanson, M.D. Access—York, 1½ miles. *See also p.* 778

*The Retreat*. Res. Med. Supt., Bedford Pierce, M.D. Access—York station, 1½ miles. *See also p.* 783

*North Riding of Yorkshire Asylum*, Clifton. Res. Med. Supt., J. Tregelles Hingston. Access — York, 2 miles.

*Bootham Park*, Bootham. Res. Med. Supt., C. K. Hitchcock, M.D., M.A. Cantab. Access—York station, 1 mile.

## TRAINING INSTITUTIONS.

Bath.—*Rock Hall House*, Combe Down, near Bath (for backward and imbecile children). Lady Supt., Miss Jane Quinton. Med. Off., J. L. Beath, M.D. Clerk, E. N. Fuller, LL.B., Bath.

Chilcompton (near Bath).—*Downside Lodge* (for children and adults). Med. Supt., Alex. Waugh, M.D. Access—Chilcompton station, about ¼ mile.

Dublin.—*Stewart Institution*, Palmerston, Chapelizod, Co. Dublin (for imbecile children). Med. Supt., Dr. F. E. Rainsford.

Dundee.—*Baldovan Asylum* (for the training and education of imbecile children). Matron, Miss Butter. Med. Off., D. M. Greig, F.R.C.S. Access—Baldovan, 1 mile.

Kingston Hill. — *Winchester House* (for backward and feeble-minded children). Res. Med. Supt. Dr. Fletcher Beach. Access—Norbiton station, S.W.R., 15 minutes.

*See also p.* 768

Kingston-on-Thames (Surrey).—*Normansfield, Trematen & Conifers* (for backward and feeble-minded of either sex). Res. Med. Supt., Dr. Langdon Down. Access—Hampton Wick station, 8 minutes.

Lancaster.—*The Royal Albert Asylum* (for the feeble-minded of the Northern Counties; 650 patients). Principal Sec., Jas. Diggens, J.P. Res. Med. Off. Dr. A. R. Douglas. Access—Lancaster, 1 mile.

*Brunton House.* A Home for special Private Pupils under training at the Royal Albert Asylum.

Larbert (Stirlingshire). — *Scottish National Institution* (for education of imbecile children). Res. Supt., A. A. Skeen. Med. Officer, Dr. R. D. Clarkson. Sec. & Treas., A. J. Fitch, Virginia Buildings, Glasgow. Access —Larbert station, ¾ mile.

London (Upper Norwood, S.E.).—*Grosvenor*, 84, Auckland Road. Supt., Miss Arkell.

Richmond (Surrey).—*Ancaster House* Richmond Hill (a small and select educational establishment for backward, mentally-feeble or neurotic children). Res. Med. Supt., G. E. Shuttleworth, B.A., M.D. Access—Richmond, S.W.R., Met. Dist. and N.L.R., 1 mile. *See also p.* 769

Southgate (Middlesex).—*Brook House* (for education and training of the nervous and backward). Res. Med. Prop., Harry Corner, M.D.

## SANATORIA FOR TUBERCULOSIS.

**The Editors desire to make this List as complete as possible, and will be obliged if authorities connected with any Sanatorium or Establishment in which "open air" or so-called hygienic methods of Treatment are employed, and the name of which does not appear below, will communicate with them in order that particulars may, if possible, appear in next year's issue of the Medical Annual.**

Axbridge (Somerset).—*St. Michael's Home* (41 beds, 24 male and 17 female). Apply to Sister in Charge. Med. Off., R.W. Statham, M.R.C.S. Access — Axbridge stn. Terms free.

Banchory (Scotland). — *Nordrach-on-Dee* (54 beds). Res. Phys., D. Lawson, M.A., M.D. (Ed.), J. S. Cooper, M.D., I. S. Stewart, M.D. Access — Banchory station, 2 miles, *via* Aberdeen.

Belbroughton (Worcs). — *Midland Open-air Sanatorium*, Bourne Castle (24 beds). Apply, Secretary. Res. Med. Off., Geo. F. Phillpot, M.R.C.S. Access — Hagley, G.W.R.; Bromsgrove, M.R.

Blagdon, Bristol.—*Nordrach-upon-Mendip* (40 beds) Res. Phys., R. Thurnam, M.D. Assist. Phys., Chas. Wheeler, M.D. Access—Wells or Cheddar, 8 miles; Langford station, 5 miles. Yatton Junction, 11 miles. Terms 5 guineas. *See also p.* 776.

Bournemouth.—*Alderney Manor*, Parkstone (26 beds). Res. Phys., Dr. W. Denton Johns. Access—Parkstone station, 2 miles.

*National Sanatorium for Consumption and Diseases of Chest* (84 beds). Sec., A. G. A. Major. Res. Phys., A. L. Bunting, M.B. Access — Bournemouth station, 1 mile. Terms 7/6 per week and a Governor's nomination.

*Overton Hall, Poole Road* (12 beds). Res. Prop., Dr. C. Guthrie Stein. Access — Bournemouth West, 7 minutes.

*Stourfield Park, Pokesdown* (40 beds). Res. Phys., Frank Fowler, L.R.C.P., M.R.C.S. Access — Bournemouth (Central) station, 3 miles.

*The Firs Home* (for advanced cases), (20 beds). Hon. Sec., Percy J. Duncan, M.D., Frogmore, Bournemouth. Hon. Med. Offs., A. E. B. Love, M.R.C.S., and P. J. Duncan, M.D. Lady Supt., Miss MaGuire.

Bridge of Weir (Renfrewshire).—*Consumption Sanatoria of Scotland.* (80 beds, females; 12 beds, males). Hon. Sec. J. P. Maclay, Esq., 21, Bothwell St., Glasgow. Res. Physician, H. Hyslop Thomson, M.D. Access—Bridge of Weir, 2 miles.

Brighton. — *Municipal Sanatorium*, for Brighton townsfolk. Object: mainly educational. Physician, Dr. Arthur Newsholme, M.O.H. for Brighton. Particulars, Town Hall, Brighton.

Chagford (Devon). — *Dartmoor Sanatorium*, (near Exeter, Newton Abbot and Okehampton). Res. Med. Supt. and Prop., Dr. A. Scott Smith. Access — Moretonhampstead, G.W.R., 6½ miles; Okehampton station, L. & S.W.R., 11 miles.

Cheddar (Somerset).—*Engel Home*, for females only (20 beds). Med. Supt., R. W. Statham, M.R.C.S. Apply to Lady Supt. Access — Cheddar station, 10 minutes.

Cheltenham.—*Cotswold Sanatorium.* Res. Phys., Dr. F. K. Etlinger. Address—Cotswold Sanatorium, near Stroud.

Chiltern Hills Sanatoria.—*Kingwood* (14 beds) and *Maitland Cottage* (for working classes, 18 beds). Peppard Common, Oxon. Res. Med. Prop., Dr. Esther Colebrooke. Access—Reading, 6½ miles.

Clare (Suffolk).—*Richmond House* (15 beds). Med. Supt., G. H. Metcalfe, M.R.C.S. Access — Clare station, 5 minutes.

Colwyn Bay (N. Wales). — *Haner-y-Ffordd Hygienic Home.* An open-air residence for patients who have undergone sanatorium treatment. Proprietor, Miss Matthews.

Crieff (Perthshire). — *Ellerslie Sanatorium.* Res. Prop., Thompson Campbell, M.D. Access—Caledonian Railway, Crieff station, ½ mile.

*See also p.* 775.

Devon and Cornwall *Sanatorium*, Didworthy, South Brent. For consumptive poor of the two counties. Particulars: Hon. Sec., S. Carlisle Davis, Esq., 28, Westwell street, Plymouth. Res. Med. Supt., Dr. J. C. Fleming. Access — Brent, G.W.R , 2 miles.

Dorking (Surrey). — *Woodhurst Sanatorium* (for Ladies only), Tower Hill (16 beds). Sec., Geo. Wright. Visiting Phys., Miss Mary R. McDougall, M.B., C.M. Ed. Access—L.B. & S.C.R. and the S.E. stations, both about 1 mile.

Terms: 1½ to 2½ guineas weekly, according to bedroom accommodation.

Dundee (near), *Sidlaw Sanatorium* (40 beds). Res. Phys., R. Campbell Macfie. Access—Auchterhouse station, 1½ miles.

Durham.—*Durham County Consumption Sanatorium*, Stanhope (45 beds, 25 male and 40 female). Sec., Mr. F. Forrest, 54, John St., Sunderland. Med. Supt., Dr. John Gray. Access—Stanhope station, 1 mile. Terms, free and by payment.

Edinburgh, Craigleith.—*Victoria Hospital for Consumption* (60 beds). For the treatment of poor patients. Visiting Physicians, Dr. R. W. Philips and Dr. G. L. Gulland. Clerk and Treasurer, 4a, St. Andrew Square, Edinburgh.

*Woodburn, Morningside* (20 beds). Res. Med Prop., Mrs. W. P. Mears, L.R.C.P.I., with Resident and Cons. Physician.

Eversley (Hants).—*Moorcote* (15 beds). Med. Supt., H. O. Grenfell, L.R.C.P. Access—Wellington College station, 4½ miles; Wokingham station, 6 miles.

Farnham (Surrey).—*Crooksbury Sanatorium* (24 beds). Res. Phys.. Dr. Rufenacht Walters. Access—Farnham station, 3½ miles; Tongham, 2½ miles; Ash, 4 miles.

*See also p.* 775

*Whitmead Sanatorium.* Res. Phys. J. Hurd-Wood, M.D. and H. G. Pesel, M.D. Apply Sec. Access—Farnham station, 3½ miles.

*See also p.* 774.

Fortbreda, Belfast. — *Forster Green Consumption and Chest Hospital* (38 beds). Vis. Phys., Drs. R. J. Purdon, J. Simpson, F. Howard Sinclair. Sec., A. Shaw, 2, May Street, Belfast. Access—Belfast, 2 miles. Mainly for the poor; 6 beds free; others by small payment.

Hull.—*Hull and East Riding Convalescent Home (Sanatorium).* (30 beds). Sec., Benjmn. Brooks, Royal Infirmary, Hull. Med. Off., A. E. Sproulle, L.R.C.P. Access — Withernsea station.

Ireland.—See Fortbreda, Warrenpoint and Wicklow.

Isle of Wight.—*Royal National Hospital for Consumption*, Ventnor. Sec., Ernest Morgan, 34, Craven Street, Charing Cross, W.C. Res. Med. Officer, J. F. H. Dally, M.A., M.D., Terms 10/- per week by recommendation from Governors.

*St. Catherine's Home*, Ventnor (for advanced cases). (12 beds, 6 male and 6 female). Apply to Sister Bernardine. Med. Officer, H. F. Bassano, M.A., M.B. Access—Ventnor, 5 mins. drive. Terms, by selection, 10/6 per week.

Kingussie (Inverness-shire, Scotland).—*The Grampian Sanatorium*, 20 beds. Res. Physician, Walter de Watteville, M.D. Access—Main Highland Rly., Kingussie station, ¾ mile.

Kinrosshire (Scotland).—*Ochil Hills Sanatorium* (60 beds). Sec., D. Hill Jack, 141, West George Street, Glasgow. Res. Phys., Dr. Neill and Dr. Watt. Access—Kinross junction, 4 miles.

Kirkmichael (Scotland).—*Knocksualtach* (6 beds). Med. Supt. Mary F. Nannetti, L.R.C.P. Access—Blairgowrie station, 13 miles, from which coaches run.

Leeds. — *Leeds Sanatorium or Consumptives*, Gateforth, near Selby (30 beds), and *Leeds Hospital for Consumptives*, Armley (20 beds). Sec., C. H. Sedgwick, 37, Great George St., Leeds. Terms free, for poor of Leeds.

Leslie (Fife).—*Walkerton Sanatorium*. Phys., J. Haddon, M.A., M.D.

Liverpool.— *Liverpool Sanatorium for Consumptives*, Kingswood, Frodsham (40 beds). Sec., Alfred Shawfield, 77*a*, Lord st., Liverpool. Res. Phys., Dr. Herapath Wood. Access — Frodsham, L. & N.W.R., 3½ miles.

London. — *Brompton Hospital for Consumption and Diseases of Chest*. Sanatorium at Heatherside, Frimley, containing 100 beds. W. H. Theobald, Sec. *See also p.* 761.

*City of London Hospital for Diseases of Chest*, Victoria Park, E. Open-air treatment provided. (164 beds). Sec., H. Dudley Ryder.

*Margaret Street Hospital for Consumption and Diseases of the Chest* (for Out-Patients), 26, Margaret st., W. No beds in London. See *Worthing*.

*Mount Vernon Hospital for Consumption and Diseases of the Chest, Hampstead* (150 beds). Access—Finchley Road (Met.) station, 1 mile. The *Country Branch Hospital at Northwood*, accommodates 100 cases. Access—Northwood (Met.) station. Hon. Visiting and Res. Staff. Free on recommendation of governors. Secretary, W. J. Morton.

*Royal Hospital for Diseases of the Chest*, 231, City Road, E.C. 80 beds. Med. Off., E. G. Pringle, M.D. Apply to the Sec. Terms by letter.

Long Stratton (Norfolk). — *Fritton Sanatorium* (7 beds). Res. Phys., Miss Mary Smith, L.R.C.P., L.R.C.S.Ed. Matron, Miss Wainwright. Access—Forncett station, G.E., 4 miles; Norwich, 10 miles.

Maldon (Essex). — *The Sanatorium*. Med. Offs., H. L. Ewens, M.D., and Dr. W. E. Facey. Access—Maldon, 1½ miles.

Manchester.— *Hospital for Consumption and Diseases of Throat and Chest*. Sanatorium at Bowdon, Cheshire. [For poor and working classes, after personal examination at Manchester.] Sec., C. W. Hunt, Manchester. Res. Phys., D. Lloyd Smith, L.R.C.P. Access—Bowdon station, ½ mile.

Margate (Kent).—*Royal Sea-bathing Hospital* (150 beds.) Sec., A. Nash, 13, Charing Cross, London, S.W. Two Res. Surgs. Access—Margate West, ¼ mile. Terms, for four weeks' stay, £2 8s. or £1 12s., according to age, for patients with Governor's recommendation.

Meathop (near Grange).—*Westmoreland Sanatorium*. Res. Med. Supt., T. H. J. Hughes, M.R.C.S., L.R.C.P. Hon. Sec., Dr. W. Rushton Parker, Kendal. Access—Grange-over-Sands station, 2½ miles.

Nayland (Suffolk).—*East Anglian Sanatorium* (35 beds), and *Mallings Farm Sanatorium* for 16 poor men and 16 women patients. Med. Supt., Dr. Jane Walker, 122, Harley Street, W. Access—Bures station, G.E.R., 3½ miles. *See also p.* 773.

Norfolk. — *Kelling Sanatorium*, Holt. Public for poor patients unable to pay. Hon. Sec., Dr. H. W. McConnel. Res. Med. Off., Mr. W. J. Fanning. Access—Holt station, *via* Norwich.

*Mundesley Sanatorium*, Mundesley (20 beds). Res. Physician, Noel D. Bardswell, M.D. Access—Mundesley station, 1 mile.

Nottingham.—*Sherwood Forest Sanatorium*, for persons of limited means, resident in Notts and district (30 beds). Sec., G. Sheldon, 36A, Bridlesmith Gate, Nottingham. Res. Med. Off., Dr. Clara Hind. Access—Mansfield, 3 miles. Free, or for 10/- per week, on recommendation of subscribers.

Ockley *Sanatorium* (Surrey). Res. Phys., Dr. Clara Hind. Access — Ockley, L.B. & S.C.R., 1 mile.

Open-Air treatment. For Ladies and Gentlemen. Pure bracing air. Very lovely country with fine views. Well sheltered. Skilled nursing. Good results. Terms 2½ guineas weekly.

Paignton (Devon). — *Dunstone Park* (10 beds). Res. Phys., T. Carson Fisher, M.D. Access — Paignton station, 1½ miles.

Painswick (Glo'stershire).—*Painswick Sanatorium, Cotswold Hills.* Res. Phys. and Prop., W. McCall, M.D. Access—Stroud, 4 miles; Gloucester, 6 miles.

Penmaenmawr (N. Wales). — *Nordrach in Wales, Pendyffryn Hall* (18 beds). Res. Prop., Dr. G. Morton Wilson. Access — Penmaenmawr station, 2 miles; Conway, 3 miles. Carriages to meet. Terms, 5 gns.
*See also p.* 776.

Portbury (Som).—*Lufthur Sanatorium.* Res. Phys., A. C. Falkiner, B.A., M.B. Access — Portbury, G.W.R., 1½ miles; Flax Bourton, 3½ miles.
*See also p.* 773.

Ringwood (Hants). — *Linford Sanatorium* (24 beds). Props. and Res. Phys., R. M. Smyth, M.D., and H. G. Felkin, M.D. Access—Ringwood station, 2½ miles

Rudgwick (Sussex) —*Rudgwick Sanatorium* (14 beds). Res. Lady Med. Officer in Charge. Access – Rudgwick station, 5 minutes; Horsham station, 7 miles.

Ruthin (N. Wales).—*Vale of Clwyd Sanatorium, Llanbedr Hall.* Res. Props., Drs. G. A. Crace-Calvert and C. E. Fish. Access — Ruthin station, 2 miles.
*See also p.* 776.

Shotley Bridge (Durham). *Belle Vue* (10 beds). Res. Phys., Dr. E. W. Diver. Access — Shotley Bridge station, 1 mile.

St. Leonard's. — *Eversfield Hospital,* West Hill (55 beds, including 8 private wards). Sec., Miss Benwell. Res. Phys., T. Gambier, M.D. Fees, 17/- weekly, or 13/- with subscriber's letter, available 4 weeks. Access—West St. Leonards, S.E.R., West Marine L.B. & S.C.R., within 5 minutes' walk.

Torquay.—*Mildmay Consumptive Home* for advanced cases only. Hon. Sec., Miss F. Gumbleton, Connemara, Torquay. Access—Torquay, 1 mile. Fees, 10/6 weekly, or 7/- with subscriber's letter.

*Western Hospital* (40 beds). Open Oct. to May. Sec., F. Manley. Terms, 7/6 by nomination, 12/6 without.

Wallingford (Berks).—*Hailey Sanatorium,* Ipsden (25 beds). Res. Med. Supt., F. S. Arnold, B.A., M.B. Access—Goring station, G.W.R., 4 miles; or Wallingford, 4 miles. Separate Châlets.

Warrenpoint (Co. Down).—*Rostrevor Sanatorium.* Res. Phys., F. Howard Sinclair, M.D. High Frequency Electrical Installation. Access — Warrenpoint. Terms, 3½ guineas.
*See also p.* 777.

Wells (Somerset).—*Mendip Hills Sanatorium* (20 beds). Chief Phys., D. J. Chowry Muthu, M.D. Apply Res. Sec. Access—Wells station, 2¾ miles. Terms, 3 to 4 guineas.
*See also p.* 774.

Wicklow.—*Altadore Sanatorium,* Kilpedder, Co. Wicklow (15 beds). Res. Phys., Dr. J. C. Smyth. Access—Dublin to Greystones, from which it is 5 miles.

*The Royal National Consumption Hospital for Ireland,* Newcastle, Wicklow (48 beds for men, 52 for women). Hon. Sec., J. R. Orpen, 5, Leinster Street, Dublin. Res. Phys. and Registrar, B. H. Steede, M.D. Access—D.W.W.R. to Newcastle, Co. Wicklow, 3 miles. Minimum fees, 7/- weekly, on subscriber's recommendation and medical examination.

Wokingham.—*London Open-air Sanatorium* (64 beds). Sec., H.W. Harris, 20, Hanover Square, London. Res. Phys., Dr. R. A. Stevenson. Access — Wellington College, S.E.R., 1½ miles; or Bracknell, L.S.W.R., 4 miles.

Worthing.—*Richmond House Convalescent Home,* in connection with Margaret Street Hospital for Consumption and Diseases of the Chest (for Out-Patients), 26, Margaret Street, London, W. (16 beds). Sec., Alice D. Brookes. Med. Off., Dr. W. Ayton Gostling. Access—Worthing, 12 mins. Payments, by subscriber's letter, 11/6.

# INSTITUTIONS FOR INEBRIATES.

LICENSED UNDER THE ACTS, 1879-1900.

The patient must sign a Form expressing a wish to enter the Home, before a magistrate. This can be done at the private residence of the patient, or at the retreat, if previous notice has been given. Two friends must also sign a declaration that they consider the patient an "Inebriate" within the meaning of the Acts.

* NOTE:—Chiswick and Spelthorne St. Mary are Roman Catholic Religious Institutions.
† Cradley Heath, Herne Hill, King's Lynn, and Torquay, are C.E.T.S. Institutions.

## MALES ONLY.

**Battle (Sussex).** — *Hancox House.* (Patients 20). Res. Supt., B. Ewart Gott. Med. Supt., W. W. Jones, M.D.

**Buntingford (Herts).** — *Buntingford House Retreat* (Patients 35). Res. Med. Supt. and Sec., G. M. Smith, M.R.C.S. Access — Buntingford, G.E.R., 8 minutes. *See also p.* 793

**Colinsburgh (Fife).** — *Invernith Lodge Retreat.* Res. Med. Supt., Dr. J. Q. Donald. Access—Kilconquhar station. *See also p.* 791

**Dinas Mawddwy (Merionethshire).** —*Plás-yn-Dinas* (Patients 17). Res. Med. Supt. and Licensee, Dr. W. F. Walker, J. P. Access—Cemmes Road.

**Folkestone.** — *Capel Lodge* (Patients 10). Res. Prop., E. Norton, M.D. Access—Folkestone Junction, 2 miles.

**Nairn, N.B.**—*Larkfield.* Res. Prop., Dr. H. W. Mann. *See also p.* 792.

**Rickmansworth (Herts).**—*Dalrymple House* (Patients 20). Res. Med. Supt., F. S. D. Hogg, M.R.C.S., L.R.C.P. Access—Rickmansworth station, Metropolitan Railway, ½ mile; L. & N.W.R., 1 mile *See also p.* 793.

**Thundersley (Essex).** — *Salvation Army Retreat* (Patients 20). Res. Supt., D. C. Lamb. Med. Off.—— Access—Hadleigh, G.E.R., 3 miles.

**Twickenham.** — *High Shot House.* (Patients 12). Res. Med. Supt., Thelwell Pike, M.D. Access—St. Margaret's station from Waterloo, 300 yards; Richmond, 1½ miles.

## MALE AND FEMALE.

**Bristol.**—*Brentry*, Westbury-on-Trym, for cases arising under the Licensing Act, 1902 (Patients 50). Res. Sup and Med. Off., Dr. Fleck. Hon. Sec., Rev. H. N. Burden. Access—Clifton Down station, 3½ miles.

## FEMALES ONLY.

**Chiswick.*** — *St. Veronica's Retreat* (Patients 40). Under the care of the Sisters of Nazareth. Med. Supt., John J. Atteridge, M.D. Access—Chiswick station, ½ mile.

**Cradley Heath† (Staffs.)**—*Corngreaves Hall* (Patients 32). Lic., Miss E. Eaves. Med. Off., Dr. Wall. Hon. Secretary, J. H. Broscomb, 29, Alcester road, Moseley, Birmingham. Access—Cradley and Old Hill stations, 1 mile

**Fallowfield.** — *The Grove Retreat*, near Manchester (Patients 25). Licensee, Mrs. M. Hughes. Med. Offs. A. T. Wilkinson, M.D., J. W. Hamill, M.D., and Dr. Margaret Bell. Access—Fallowfield station, 10 minutes. *See also p.* 792.

**Herne Hill.†** — *Ellison Lodge*, Half Moon Lane (Patients 33). Res. Supt., Miss Manby. Med. Supt., Dr. P. Barham. Access—Herne Hill.

**King's Lynn† (Terrington, St. Clement's).** — *Hamond Lodge* (Patients 30). Res. Supt., the Sister in Charge. Med. Supt., S. R. Lister, M.R.C.S. Acc.—Terrington, 1½ mls.

**Leicester.**—*Melbourne House* (Patients 10). Prop., Mr. H. M. Riley. Med. Supts., C. J. Bond, F.R.C.S., and R. Sevestre, M.A., M.D., Camb. station, 2 miles. *See also p.* 790.

**Reigate (Surrey).** — *Duxhurst* (Patients 10). Supt., Sister in charge Med. Supt., A. Walters, M.R.C.S Access—Reigate, 4 miles.

**South Cave, Yorks.**—*The Hermitage* (Patients 16). Res. Supt., the Matron. Sec., Mrs. T. R. Pentith, Sutton-on-Hull. *See also p.* 777

**Spelthorne St. Mary* (Bedfont, Middlesex).**—(Patients 10). Apply to Sister in Charge, C.S.M.V. Access —Feltham, S.W.R., 1 mile.
Licensed under Inebriates Acts. Females—Primarily Gentlewomen and Middle Classes 23. Treatment—Physical, Moral, and Spiritual.

**Torquay.†**—*Temple Lodge* (Patients 10). Res. Supt., the Sister in Charge. Med. Off., W. Odell, F.R.C.S. Hon. Sec., Mrs. H. H. Erskine.

**Wandsworth.**—*Northlands Retreat*, North St., Old Wandsworth, S.W. (Patients 12). Med. Lic., Dr. J. Round. Lics., Misses Round.

## REFORMATORIES CERTIFIED UNDER THE INEBRIATES ACT, 1898.

### Male and Female.

Bristol. — *Brentry certified Inebriate Reformatory*, Westbury-on-Trym (Beds 311). Res. Supt. and Med. Officer, Dr. D. Fleck. Hon. Sec., Rev. H. N. Burden. Access — Clifton Down, Redland, or Patchway stations, 3½ miles

### Females Only.

Ackworth (Yorkshire).—*North Midlands Inebriate Reformatory* (Beds 90). Res. Supt., the Officer in Charge. Med. Off., Dr. R. H. Rigby. Access—Ackworth station, 1½ miles.

Bristol.—*Royal Victoria Home, Horfield.* (Beds 25). Res. Supt., the Officer in Charge. Med. Off., Dr. W. Cotton. Hon. Sec., Rev. H. N. Burden. Access — Montpelier and Bristol stations.

Chesterfield (Derbyshire).—*Midland Counties' Inebriate Reformatory, Whittington* (Beds 157). Res. Supt., the Officer in Charge. Med. Off., Dr. A. M. Palmer. Access—Whittington Station, ½ mile; Chesterfield, 3 miles.

East Harling, (Norfolk).—*Eastern Counties' Inebriate Reformatory*, East Harling, near Thetford (Beds 170). Res. Supt., the Officer in Charge. Med. Off., Dr. W. Adams. Access—Harling Road Station, 3½ miles.

Horley (Surrey). — *Farmfield* (Beds 113). For London cases, under Sec. II of the Act. Res. Supt., Miss Forsyth. Med. Off., Dr. C. F. Williamson. Access—Horley Station, 3½ miles.

Langho, (Lancashire).— *Lancashire Inebriate Reformatory*, Langho, near Blackburn (Beds 124). For Lancashire cases. Res. Supt. and Med. Off., Dr. F. A. Gill. Access—Langho Station, 2 miles.

Lewes (Sussex). — *Southern Counties' Inebriate Reformatory, St. Anns, Lewes.* (Beds 150). Res. Sup., the Officer in Charge. Med. Off., Dr. W. A. Dow. Access—Lewes station ½ mile.

## UNLICENSED HOMES.

### Females Only *(except Bristol, Dunvegan, Norwood, and Stonehaven).*

Bristol.—*Dunmurry*, Sneyd Park, near Clifton (Gentlefolk only, 3 of each sex). Res. Med. Prop., Jas. Stewart, B.A., F.R.C.P. Ed., and Mrs. Stewart. Access — Bristol or Clifton Down stations, 1¼ mile from the latter.
*See also p.* 790.

Croydon.—*Glendalough*, Morland Road (Patients 5). J. M. Hobson, M.D. Access—East Croydon, 10 mins.

Durham. — 25 Allergate. Hon. Sec., Miss King. Med. Supt., Dr. Robson, Access—Durham, ½ mile.

Edinburgh.—*Queensberry Lodge*, Supt., Major Macartney. Med. Supt., Dr. William Russell. Access—Waverley station, ½ mile. *See also p.* 793.

Hounslow (Middlesex).—*West Holme.* Supt., Matron in Charge. Med. Supt., Dr. G. A. S. Gordon. Access — Hounslow, ¾; Dist. R., ¼ mile.

Huddersfield (Yorks).—*High Flatts Sanatorium.* Supt., the Matron. Access — Denby Dale, 1½ miles; Penistone station, 3½ miles.

Leicester.—*Tower House.* Prop., Mrs. Theobald. Med. Attendant. A. V. Clarke, M.D. Access — Leicester station, 1½ miles. *See also p.* 792.

Liverpool.—*Temperance Home*, 318, Upper Parliament Street. Supt., Miss A. J. Wilson. Med. Supt., C. Soloman, M.R.C.S.

London.—*Norwood Sanatorium*, 93, Church Road, Upper Norwood, S.E. Res. Med. Supt., C. A. McBride, M.D. Access—Crystal Palace station. 10 mins.

**Course of treatment, six weeks. Method disclosed to the Profession. Beautiful Grounds.**

London. — *Weir Hall*, Edmonton. Access—Silver Street (G.E.), 1 mile. Palmers Green (G.N.), 1½ miles.
*See also p.* 790.

Maldon, (Essex).—*Rivermere*, Osea Island. Res. Med. Supt., F. F. Moore, L.R.C.S.I.

West Derby (near Liverpool).—*Vergmont Sanatorium.* Supt., Miss Mary M. Hocking. Hon. Med. Offs., Dr. H. Harvey and Dr. C. Thurstan Holland. Access — West Derby station, ¼ mile; Tue Brook station, ¼ mile; Edge Hill station, 3 miles. *See also p.* 789.

# HYDROPATHIC ESTABLISHMENTS.

We wish to make this list complete, but it is impossible when some Proprietors do not return our letter of enquiry, which is *stamped for reply*. This will account for some omissions in the present edition.

**Aberdeen.** — *Deeside Hydropathic* Murtle, near Aberdeen. Res. Med. Supt., Alex. Stewart, M.D., LL.D., F.S.Sc. Access—Rail to Aberdeen, thence to Murtle station on the Deeside line, 5 miles from Aberdeen; from this station, 8 minutes.
*See also p.* 798.

**Baslow.**—*Baslow Grand Hotel Hydropathic*, near Chatsworth Park. Res. Med. Supt., E. M. Wrench, F.R.C.S. Access—Bakewell stat. 4 mls. by 'bus.

**Bath.**—*Lansdown Grove House*, Lansdown, Bath (invalids only; special arrangements for patients suffering from gout, rheumatism, and physical infirmities). Med. Supt., Dr. Percy Wilde. Access—M.R. or G.W.R. sta., Bath, about 1 mile. *See also p.* 771

**Ben Rhydding.**—*Ben Rhydding*, near Leeds, Bradford, or Harrogate. Phys., Thos. Scott, M.D. and Dr. W. R. Bates. Access—Station, a few hundred yards.

**Bexhill.**—*Wilton Court Hydropathic*, De Vere House. Man., Miss Geake.

**Bishops-Teignton (nr. Teignmouth).** —*The South Devon Health Resort.* First-class Turkish Baths. Prop., C. F. Carpenter. Med. Supt., Arthur E. Hayward, M.R.C.S. Access—Teignmouth, 2½ miles. *See also p.* 803

**Blackpool.**—*Matlock Hydro & Boarding House*, Station Road. Access—3 mins' walk from South Shore station.

**Bournemouth (Hampshire).**—*Bournemouth Hydropathic.* Res. Prop., W. J. Smyth, M.D. Access—East station 1¼ mile; West station. ¼ mile.
*See also p.* 803.

**Bridge of Allan.** — *Bridge of Allan Hydropathic Co.* Manager, H. B. Higgins. Access—Station, ½ mile.

**Bristol.**—*The Bristol Hydropathic* (formerly Bartholomew's Turkish Baths), College Green. Res. Phys., W. J. Spoor, M.B., M.R.C.S.

**Burgess Hill (Sussex).** — *Wynnstay Hydrotherapeutic Sanatorium.* Prop. Mr. Richard Haynel. Access—Brighton, 9 miles.

**Bute.**—*Kyles of Bute Hydropathic*, Port Bannantyne, Rothesay. Man., A. Menzies. Med. Supt., Dr. A. J. Hall. Access—Clyde steamers call daily.

**Buxton.**—*Buxton Hydropathic.* Man. Director, H. Lomas. Access—Station, 4 minutes.

*Corber Hill Hydro*, Clarendon House. Man., Miss L. Adams. Access—Buxton station, 5 minutes.

*Haddon Hall Hydro.* Prop., Mrs. G. E. Hall.

*The Peak Hydro.* Man., Mrs. Macgregor.

**Callander, N.B.** — *Callander Hydro.* Apply, Manager.

**Clevedon (Somerset).** — *Clevedon Hydropathic.* Res. Med. Supt., W. J. Cummings, M.B. Access—Clevedon, 1 mile.

**Clifton (near Bristol),**—*Clifton Grand Spa and Hydropathic.* Access—Clifton Down station, 1 mile; Bristol station, 1½ miles. *See also p.* 795

**Cork.**—*St. Ann's Hill Hydropathic.* Res. Phys., Dr. A. G. Bennett. Access—Blarney station, 2½ miles; Muskerry Light Railway from Cork, station on grounds.

**Crieff.**—*Strathearn House* (17 miles from Perth). Res. Med. Supts., Thos. H. Meikle, M.D., J.P., and T. Gordon Meikle, M.B., C.M. Access—Crieff station, 1 mile.

**Dunblane.** — *Philp's Dunblane Hydropathic*, Perthshire. Res. Phys., Dr. Philp. Access — Dunblane station, ¾ mile. *See also p.* 801.

**Eastbourne.**— *Eastbourne Hydropathic.* Man., O. F. Bergann.

**Edinburgh.** — *Hydropathic*, Slateford. J. Bell, Man. Dir. Access—Merchiston, 1 mile; Waverley, 3 miles.

**Forres.**—*Cluny Hill Hydropathic.* Vis. Phys., Dr. John Adam. Access—Forres station, 1 mile; Inverness, 24 miles.

**Grange-over-Sands.**—*Hazelwood Hydropathic.* Physicians, Richard Lowther, M.D., and Owen Gwatkin, M.R.C.S. Access—Carnforth, L. & N.W.R., and thence by Furness Railway; Grange-over-Sands, ¼ mile.

**Harrogate (Yorkshire).** — *Harlow Manor Hydro.* Man. Mr. Fenn, Med. Supt., Dr. Dimmock.

*The Cairn Hydropathic.* Near Leeds and Bradford. Man., Mrs. Baker. Access—Harrogate, ½ mile.

*The Harrogate Hydropathic.* Phys., M. B. Ray, M.D Access—Harrogate station, ½ mile.

Hexham (Northumberland).—*Tynedale Hydropathic.* Prop., F. G. Grant. Med. Supt., Dr. Stewart. Access—Hexham, 1 mile; Newcastle, 19 miles.

Ilkley (Yorkshire).—*Craiglands Hydropathic.* Props., Dobson Bros. Res. Med. Supt., Henry Dobson, M.D., C.M.

*Ilkley Wells House Hydropathic.* Med., Supt. Thos. Scott, M.D. Manager, Mr. Ballardie. Access—Ilkley station, ¼ mile.

*The Spa Hydropathic*, near Leeds and Bradford. Manageress, Miss Pugsley. Med. Supt., T. Johnstone, M.D. Access—Ilkley, 3 minutes.

*Troutbeck Hydro.* Manageress, Mrs. Richardson.

Kilmalcolm (Renfrewshire.)—*Hydropathic.* Access—Greenock, 7 miles; 16 miles from Glasgow, G. & S.W.R.

Limpley Stoke (near Bath).—*West of England Hydropathic.* Med. Supt., J. E. Long, M.D. Access—Limpley Stoke station.

Lincoln.—*Northcote Hydro.*, Woodhall Spa. Res. Med. Supt., R. Cuffe, M.R.C.S.—Apply to Manager.

Llandudno.—*Hydropathic and Winter Residence.* Med. Supt., James Craig, M.B. Access—Llandudno station, 5 minutes.

Malvern.—*The Malvern Hydropathic*, Res. Prop., J. C. Fergusson, M.D. Access—Gt. Malvern station, ¼ mile.
*See also p.* 797

*Wyche-side Hydropathic.* Res. Phys., Dr. Grindrod. Access — Malvern Wells station, G.W.R., ½ mile; Great Malvern station, 2 miles.

Matlock.—*Matlock House Hydropathic*, Matlock. Physician, W. Moxon, M.D., J.P. Access—Matlock Bridge, M.R., ¼ mile.

Newest Electric Heat and Light Therapy, Dowsing Radiant Heat and Light Baths (the only complete installation in Matlock), High Frequency and Sinusoidal currents, X-Rays Apparatus, etc., etc.

*Rockside Hydropathic*, Matlock. Med. Supts., Drs. A. L'Estrange Orme and Marie Goodwin. Access—Matlock Bridge, ¾ mile.

800 feet above sea level. Pure mountain air; south-west aspect; sunshine above normal; rainfall under normal. Baths. Massage. Write for illustrated booklet.

*Royal Hotel and Baths*, Matlock-Bath. Phys., W. C. Sharpe, M.D. Man., E. Thoma-Badrutt. Access—Matlock-Bath station.
*See also p.* 798

*Smedley's Hydropathic*, Matlock Bridge. Res. and Vis. Physicians. Access — Matlock Bridge station, ½ mile; omnibus.
*See also p.* 796

Melrose.—*Waverley Hydropathic.* Con. Phys., Drs. Calvert and Wade. Access—Melrose station, 1 mile.

Moffat.—*The Moffat Hydropathic.* Man., W. W. Rathie. Med. Supt., Dr. Huskie.

Peebles.—*Peebles Hydropathic and Hotel.* Res. Specialist. High Frequency, Static Electricity and all the latest Electric Light Baths. Douche, Massage, etc., Air, Sun and Mud Baths. Kneipp's Meadow, etc.—The Cure Regime of a German Bad with the comfort and luxury of a high-class modern Hotel. Access—Peebles station, ¾ mile; 'bus meets trains.
*See also p.* 799

Rhyl (North Wales).—*The Claremont Hydropathic.* Manager

Rothesay.—*Glenburn Hydropathic.* Med. Supt., Dr. Marshall. Access—Wemyss Bay, 1½ hours' sail.
*See also p.* 801.

Scarborough.—*Hydropathic.* Manager, W. A. Phillips. Access—Scarborough, N.E.R., ¼ hour.

Shandon.—*Shandon Hydropathic.* Consulting Phys., Dr. Douglas Reid; Phys., Dr. Wm. R. Sewell. Access—N.B.R. and Steamer.

Skelmorlie.—*Wemyss Bay Hydropathic.* Med. Supt., Ronald Currie, M.D. Access—Wemyss Bay station, ½ mile.

Southport (Birkdale Park).—*Smedley Hydropathic.* Phys. J. G. G. Corkhill, M.D. Southport or Birkdale stations.
*See also p.* 803

*Kenworthy's Limes Hydropathic*, 51, Bath Street. Phys., Drs. A. B. Kenworthy and R. H. Wilshaw. Access—Chapel Street, Lord Street, or Central station, ¼ mile.

*"Sunnyside" Hydropathic Comfy.* Man., J. Marshall. Phys., Dr. F. A. Ernest Barnardo. Access—Southport stations, ½ mile.

Tunbridge Wells.—*The Spa.* Access—Station, about ½ mile; London, 32 miles.
*See also p.* 803

Ulverston and Barrow-in-Furness. —*Conishead Priory Hydropathic.* Med. Supt., Dr. Ashburner. Access—Ulverston station.

Watford.—*The Hall,* Bushey. Man., Col. Coyne. Med. Supt., Dr. F. Smith. Access—L.& N.W.R., 1 mile.

West Kilbride. — *Seamill Hydro.* Apply, Manager.

Windermere.—*Windermere Hydropathic* 9 miles from Kendal. Access—Windermere, L. & N.W.R., 1 mile. Furness Rly. (Bowness Landing), ¼ mile; Pier on lake, about 300 yds.

## PRIVATE HOMES FOR INVALIDS.

Bournemouth.—*Victoria and Bournemouth Nursing Institute and Home,* Cambridge Road (for paying patients) Apply the Matron. *See also p.* 766

Buxton.—*Corbar Tower,* Dietetic and Medical Home. Apply Mrs. Owen. Access—Station, Pump Room and Baths, 10 minutes' walk.
*See also p.* 765

*Medical and Residential Home,* 10, Terrace Road. Apply Miss Wilde.
*See also p.* 768

Evesham (Worcs.)—*Greenhill.* Principal, Mrs. Hoddinott. Access—M.R. and G.W.R stations, Evesham

Hadlow Down (Buxted, Sussex).—*South Beacon* (for the care and treatment of ten gentlemen mentally affected, but who are not ill enough to be certified). Prop., Philip H. Harmer. Twenty years' experience. Access—Buxted, 3 miles; Mayfield, 4 miles; Heathfield, 4 miles.
*See also p.* 769

Jedburgh.—*Abbey Green.* Res. Prop. Wm. Blair, M.D. Access—N.B.R., Jedburgh. *See also p.* 773.

London.—*Netley House,* 15, Henrietta St., Cavendish Square, W. Apply Sister-in-charge. *See also p.* 773

*St. Thomas's Home,* St. Thomas's Hospital, Albert Embankment, S.E. Apply, Sydney Phillips, B.A., St. Thomas's Hospital, S.E. Access—Waterloo, 5 minutes.
*See also p.* 765

Plymouth.—*Woodside House,* 4, Woodside. Lady Supt., Miss L. Beckwith. Access—Mutley station, 5 minutes' drive.

Stanmore, Middlesex. — SCARLET FEVER *Convalescent Home* (*The Mary Wardell*). Med. Off., J. D. Thomas, M.B. Hon. Sec., Miss M. Wardell. Access — Stanmore (L. & N.W.R.), 2 miles. *See also p.* 771

## NURSING INSTITUTIONS.

The information given here is necessarily brief: but further particulars may be added in small type, at the rate of 2 - per dozen words.

### LONDON.

All Saints Nurses' Home, 3, Fitzroy Street, W. Supt.

Auxiliary Nurses' Society of the Royal British Nurses' Assoc., 10, Orchard Street, W. Sec., Miss A. J. Hobbs.
Supplies Registered fully-trained Hospital Nurses—Medical, Surgical, Mental, Fever, and Maternity.

Baker Street Assoc. of Trained Nurses (Regd.), 15, Baker Street, W. Supt., Miss Masters.

Baker Street Trained Nurses' Institute, 9, Upper Baker Street, N.W., close to station. Lady Supt., Miss M. A. Hooper.

Belgravia Nursing Home, 39 and 41, Royal Avenue, Chelsea, S.W. Principal—Mrs. Walter Pye.

Blackheath Nursing Inst., 9, Montpelier Row, Blackheath, S.E. Principal—Miss Duncan.

Clapton Medical & Surgical Home, 8 & 10, Southwold Road, Upper Clapton. Supt., Miss Dugard.

Colonial Nursing Assoc., Imperial Institute, London, S.W. Hon. Sec., Miss C. A. Hutton.

Elgin Nursing Inst, The, 258, Elgin Avenue, W. Supt., Miss F. S. Webb.
Medical, Surgical, and Maternity Nurses supplied. A few patients in the Home.

General Nursing Institute, 5, Manderville Place, Manchester Square, W.

Guy's Hospital Trained Nurses' Inst., 14, St. Thomas Street, S.E.

Hampstead General Hospital Nursing Institute, Parliament Hill, N.W. Matron, Miss Rosa Gregory.

Hanover Institute for Nurses and Private Hospital, 22, George St., Hanover Square, W. Lady Supt., Miss Sophia Walker.

Hospital for Sick Children, Private Nursing Home, Gt. Ormond St., W.C. Matron, Miss Gertrude Payne.

London Association of Nurses, 123, New Bond Street, W. Lady Supt., M. Firth.

London Homœopathic Hospital Nursing Inst., Great Ormond St., W.C. Lady Supt., Miss Brew.

London Hospital Private Nursing Inst., Whitechapel Road, E. Matron, Eva C. E. Luckes.

Male Nurses' Association, 23, York Place, Baker Street, W. Supt., Wm. Gutteridge.

Certificated Male Nurses and Masseurs supplied. Telegrams, "Assistiamo, London"; Telephone, 2437 Paddington.

Male Nurses' (Temperance) Co-operation, Ltd., 10, Thayer Street, W. Sec., F. Rouse Walshe.

Male and Female Nurses' Mutual Benefit Assoc., 91, George Street, W. Supt., W. E. Langton.

Male and Female Temperance Nurses Co-operation, 45, Beaumont Street, Portland Place, W. Sec., G. Gordon.

Maternity Nursing Association, 5, Little James Street, Gray's Inn Road, W.C. Resident Matron.

Provident Institution for nursing poor married women in their homes during their confinement. Pupils trained in midwifery and monthly nursing. For fees apply to Matron.

Metropolitan Nursing Assoc., 23, Bloomsbury Square. For nursing the Sick Poor. Supt., Miss Hadden.

Middlesex Hospital Institute, 17, Cleveland Street, W. Supt, Miss M. M. Wethered.

Midwives' Inst., 12, Buckingham St., Strand, W.C. Apply Secretary.

Mildmay Nursing Home, 9 & 10, Newington Green, N. Supt., Miss Carter.

Nervous and Mental Disorders, Nurses for, 1, Culross Street, Grosvenor Square, W. Supt., Mrs. Caldwell.

North London Nursing Inst. and Home, 6 and 8, Alexandra Rd., N.

Nurses' Co-operation, 8, New Cavendish Street, W. Supt., Mrs. Lucas.

Nursing Home and Institute, Netley House, 15, Henrietta St., W. Apply, Sister-in-Charge. *See also p.* 773.

Nursing Home and Institute, 210, Clapham Road, S.W. Matron, Miss Coleman.

Nursing Institute, 39 & 41, Boundary Road, N.W. Supts., Mrs. Dalison and Miss Coleclough.

Nursing Sisters' Inst., 4, Devonshire Sq., E.C. Lady Supt., Miss Russell.

Nursing Sisters of St. John the Divine, 21, Drayton Gardens, S. Kensington. Sister Superior, A. I. Beaver.

Paddington and Marylebone District Nursing Association, 4, Randolph Road, W. Supt. Miss S. M. Marsters.

Palmer's Green Nursing Inst., Palmer's Green, N. Principals, A. and M. Wood.

Pembroke Nursing Inst. and Home for Paying Patients, 116, Adelaide Road, N.W. Matron, S. Gee Wainwright, cert. L.O.S.

Portman Temperance Male and Female Nurses' Assoc., 19, Adam Street, W. Sec., M. Honour.

Queen Victoria's Jubilee Inst. for Nurses, 120, Victoria St., S.W. (for supplying trained district nurses for the poor). Gen. Supt., Miss Peter.

Registered Nurses' Society, 431, Oxford Street, W. Secretary, Miss Cartwright.

Richmond Nursing Inst., 2, The Green, Richmond, Surrey. Supt., Miss Plumbe.

St. Bartholomew's Hosp. Trained Nurses Inst., 13, West Smithfield.

St. John Ambulance Association, St. John's Gate, Clerkenwell. Chief Secy., Col. Sir H. Perrott, Bt., C.B.

*See also p.* 771

St. John's House, 7 & 8, Norfolk St., Strand. Supt., Sister Superior.

Society of Chartered Nurses, 24, Princes Street, W. Secretary.

South Kensington Nurses' Co-operation, 39, Alfred Place, W.

Southwark, Newington & Walworth District Nursing Assoc., 37, West Sq., S.E. Supt., Miss E. H. Courtenay.

Temperance Male Nurses' Co-operation, Ltd., 50, New Cavendish Street, W. Sec., M. D. Gold.

*See also p.* xviii.

Temperance Nursing Society, 67, Edgware Road, W. Sec., J. Coombs.

Up-Country Nursing Assoc. for Europeans in India. Hon. Sec., H. M. Birdwood, C.S.I., LL.D., Dalkeith House, Cambridge Park, Twickenham.

Copies of Rules for Engagement of Nurses, and information regarding work, can be obtained from Mrs. Sheppard, 10, Chester Place, Regent's Park, London.

Victoria Hospital, Nursing Staff, Chelsea, S.W. Matron, Miss Watson.

Westminster Home for Nurses, 27, Queen Anne's Gate, S.W. Matron, Miss Longbottom.

Wigmore Nurses' Co-operation and Home for Paying Patients, 59, Weymouth St., W. Principal, Miss S. A. Warburton.

## PROVINCIAL.

Bath.— *Home for Trained Nurses*, 44, Rivers St. Lady Supt., Miss Evelyn Hurlbatt.

*Lansdown Hospital Nursing Home and Private Nursing Institute*, Lansdown. Apply, the Matron.

*See also p.* 771

*Royal United Hospital Private Nursing Institute.* Matron, S. E. Polden.

Belfast.— *Nurses' Home and Training School*, Frederick Street. Lady Supt., Miss Newman.

Birmingham.—*Birmingham & Midland Counties' Institute for Trained Nurses*, 12, The Crescent. Lady Supt., Miss M. D. W. Ewing.

Telegrams, "Uniforms, Birmingham." Telephone, 1157. Supt., Miss Ewing, 12, Crescent, Birmingham.

*Birmingham & Midland Homœopathic Hospital.* Lady Supt., Miss Mossop.

*District Nursing Society*, 94, Moseley Road; Lady Supt., Miss Graham, 98, Newhall St.; Lady Supt., Miss Hayward

*Nurses' Co-operation & Nursing Home*, 278, Monument Road., Edgbaston. Lady Supt., Mrs. Spofforth.

*Queen's Hospital*, External Nursing Depart. Supt., Charlotte Elkington.

Bournemouth.—*Victoria Nurses' Institute and Home Hospital*, Cambridge Rd. Matron, C. Forrest. Access—Bournemouth West station.

*See also p.* 766

Bridlington.—*Lloyd Hospital.* Matron, Miss Ada A. Hoghton.

Brighton.—*Home for Trained Nurses and Paying Patients*, 92, King's Road, Supt. Mrs. Frazer.

*Sussex County Hospital Private Nursing Inst.* Matron, K. Scott.

Bristol. — *District Nurses' Society*, 6, Berkeley Square, Clifton. Lady Supt., Florence E. Lloyd.

*General Hospital.* Matron, Miss S. Morris; Sec., Wm. Thwaites.

*See also p.* 765.

*Nurses' Co-operation and Home*, Westbourne Place, Clifton. Supt., Miss Rogers.

*Nurses' Institute*, 3 & 4, Chesterfield Place, Clifton. Lady Supt., Miss Thompson-Hill.

*Private Nursing Home*, 13, Pembroke Road, Clifton.

*Royal Infirmary Private Nursing Inst.* Matron, Miss A. B. Baillie. Sec., Richard J. Coles.

Bromley (Kent). — *Margaret Nursing Home*, London Road. Supt., Sister Margaret.

Burton-on-Trent. — *Nursing Inst.*, 59. Union Street. Matron, Miss E. Goodall.

Cambridge.—*Home for Nurses*, 13, Fitzwilliam St. Lady Supt., Miss Rogers.

Cheltenham.—*General Hospital* Private Nursing Staff. Matron, Miss G. Moller.

Cork.—*Victoria Hospital for Women and Children.* Lady Supt., Mrs. George Armstrong.

*Nursing Institution*, 28, South Ter. Hon. Lady Supt., Miss Lucy Knight.

Coventry.—*District and Private Nursing Inst.* Matron, Miss Wing.

Derby.—*Royal Derby and Derbyshire Nursing Association*, London Road. Lady Supt., Miss Agnes Atthill.

National Telephone 146. Telegrams "Nursing." Large staff monthly, medical, and surgical nurses.

Devonport. — *Royal Albert Hospital Nursing Inst.* Matron, Miss Glover.

Fee charged, per week: Ordinary cases, £1 11s. 6d.; Infectious, Operation, and Hysterical, £2 2s.; Small Pox, £3 3s.; Massage, £2 2s., or 5s. per visit. Travelling expenses and laundry extra.

Dublin.—*City of Dublin Nursing Inst., Ltd.*, 27, Upper Baggot Street. Lady Manager, Mrs. R. K. Treacy.

*Dr. Steevens' Hospital Private Nursing Inst.* Supt., Miss B. M. Kelly.

*Redcross Nursing Sisters' House & Training School for Nurses*, 87, Harcourt Street. Supt., Miss Bessie Lyons.

*Rotunda Lying-in Hosp. Nursing Home*, Great Britain St. Lady Supt., Miss Lucy Ramsden.

*St. Patrick's Nurses' Home*, 101, St. Stephen's Green, for supplying Trained Nurses to the Poor in their Homes free of charge. Supt., Miss F. Franceys Howell.

Edinburgh.—*Nurses' Co-operative Assoc.* 2, Melville Street. Supt., Miss Lorraine.

*Royal Scottish Nursing Inst*, 69, Queen Street and 14, Castle Street, Dumfries. Matron, Miss King.

Ordinary cases, 30/- weekly; Mental, Massage, Infectious, 42/-. Maternity, £8 8s. one month. Telegrams: "Matron, Edinburgh." Telephone 2228.

Exeter.—*Royal Devon and Exeter Hosp.* Matron, Miss E. Smale.

*Trained Nurses' Inst.* (founded 1866), 7, Colleton Crescent. Sec. and Supt., Miss M. Mathew.

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It is easier to make a note of a thing than to remember *where* the note was made. The following pages are indexed under their respective headings, and any note can be immediately found when required.

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Copy here any formula or fact you wish to keep for reference. (These pages are indexed under the word "Notes.")

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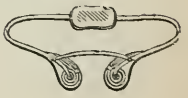

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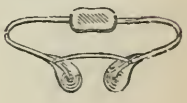

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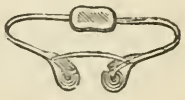

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| Caledonian, Fire and Life, 19, George Street, Edinburgh. *Gen. Man.*, D. Deuchar. London Offices, 82, King William Street, E.C., and 14, Waterloo Place, S.W. .. .. .. .. P | 1805 | 48/9 | 64/6 | 88/6 | 2,124,713 |
| City of Glasgow, Life, 30, Renfield Street, Glasgow. *Gen. Man.*, William S. Nicol. London Office, 12, King William St., E.C. *Lon. Man.*, J. D. Milne P | 1838 | 48/9 | 64/6 | 89/10 | 2,661,546 |
| Clergy Mutual, Life, 2 & 3, Sanctuary, Westminster. *Act. & Man.*, F. B. Wyatt. *Sec.*, W. N. Neale. *Further particulars see page* 713 .. M | 1829 | 46/4 | 62/2 | 87/4 | 4,194,484 |
| Clerical, Medical and General, Life, 15, St. James' Square, and 1, King William Street, E.C. *Act.*, W. J. H. Whittall .. .. .. P | 1824 | 48/7 | 66/9 | 96/3 | 4,005,892 |
| Colonial Mutual, Life and Annuity, 33, Poultry. *Man.*, Edward W. Browne .. .. M | 1873 | 47/4 | 63/2 | 89/9 | 2,706,829 |
| Commercial Union, Fire, Life and Accident 24, 25, and 26, Cornhill, E.C. *Act.*, A. G. Allen P | 1861 | 49/5 | 64/2 | 87/8 | 2,642,521 |
| Co-operative, Life, Fidelity, and Fire, Long Millgate, Manchester. *Sec.*, James Odgers. *Further particulars see page* 715 .. .. .. P | 1867 | 45/8 | 61/5 | 88/4 | 45,368 |
| Eagle, Life, 79, Pall Mall, S.W. *Gen. Man.* and *Sec.*, Geo. R. Jellicoe .. .. .. P | 1807 | 50/8 | 65/5 | 91/4 | *2,401,819 |
| Economic, Life, 6, New Bridge Street, Blackfriars. *Act.* and *Sec.*, G. Todd, M.A., F.I.A. M | 1823 | 44/4 | 59/6 | 85/5 | 4,223,911 |
| Edinburgh, Life, Endowments, and Annuities, 22, George Street, Edinburgh. *Man.*, A. Hewat, F.F.A., F.I.A. *Sec.*, T. M. Gardiner. London, 11, King William St., E.C. *Sec.*, J. J. Bisgood P | 1823 | 47/11 | 64/2 | 90/2 | 3,777,984 |
| English and Scottish Law, Life, Annuity, Endowment, and Loan, 12, Waterloo Place, S.W. *Gen. Man.*, Albert G. Scott .. .. .. P | 1839 | 49/6 | 65/2 | 90/11 | 2,498,037 |
| Equitable Life Assurance Society, Mansion House Street, E.C. *Act.*, H. W. Manly, F.I.A. M | 1762 | 53/5 | 67/11 | 90/7 | 4,909,920 |
| Equity and Law, Life, 18, Lincoln's Inn Fields, W.C. *Act.*, W. P. Phelps, F.I.A., M.A. .. P | 1844 | 48/10 | 64/6 | 90/9 | 4,000,000 |
| Friends' Provident, Life, Annuities, etc., Bradford, Yorkshire. *Sec.*, Wm. H. Gregory .. M | 1832 | 48/- | 64/- | 89/7 | 3,027,000 |

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40, *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices*; P, *Proprietary Offices.*

| Title, Etc., of Office. | A | B | C | D | E |
|---|---|---|---|---|---|
| | | | | | £ |
| General, Life, 103, Cannon Street, E.C. *Man.* and *Sec.*, John Robert Freeman. *Further particulars see page* 714 .. .. .. P | 1837 | 49/10 | 65 4 | 92 8 | 1,915,604 |
| Gresham, Life, St. Mildred's House, E.C. *Man.* and *Sec.*, James H. Scott .. .. P | 1848 | 49 - | 65/8 | 94/3 | 8,492,937 |
| Guardian, Fire, Life, Accident, and Burglary, 11, Lombard St., E.C., and 21, Fleet Street. *Sec.*, T. G. C. Browne.. .. .. .. P | 1821 | 48/10 | 64 6 | 89/3 | 3,224,467 |
| Hand-in-Hand, Fire, Life and Annuities, 26, New Bridge St., E.C. *Sec. & Act.*, H. C. Thiselton M | 1696 | 55 2 | 73 10 | 104/4 | 3,214,365 |
| Law Life, 187, Fleet Street. *Man.*, E. H. Holt. *Joint Acts.*, A. B. Adlard and J. E. Faulks P | 1823 | 49 4 | 64 10 | 91/- | 4,033·474 |
| Law Union & Crown, Life, Fire, Accident & Annuities, 126, Chancery Lane. *Gen. Man.*, A. Mackay P | 1825 | 48 4 | 64 - | 89/10 | 4,507,176 |
| Legal and General, Life, 10, Fleet Street, E.C. *Act.* and *Man.*, E. Colquhoun ... .. P | 1836 | 50 9 | 65/11 | 90/9 | 4,400,000 |
| Life Association of Scotland, 82, Princes Street, Edinburgh. *Man.*, John Turnbull Smith. *Sec.*, J. Sharp. London Office, 5, Lombard Street. *Sec.*, J. C. Wardrop .. ... .. P | 1838 | 50 - | 65 4 | 93/4 | *5,204,142 |
| Liverpool and London and Globe, Fire, Life, and Annuities, 1 Dale St., Liverpool. *Gen. Man. & Sec.*, John M. Dove. London Office, Cornhill, E.C. *Act.*, W. F. Somervile, F.I.A. .. P | 1836 | 49/3 | 65 6 | 91/3 | 5,528,029 |
| London and Lancashire, Life, 66 & 67, Cornhill, E.C. *Genl. Man. & Act.*, W. P. Clirehugh. *Sec.*, G. W. Mannering .. .. .. .. P | 1862 | 46/10 | £2 4 | 86/10 | 1,770,108 |
| London Assurance Corporation, Fire, Life, and Marine, 7, Royal Exchange. *Man.* of Life Dept., James Clunes. *Act.*, A. G. Hemming .. P | 1720 | 49 6 | 64 11 | 91 5 | 2,219,120 |
| London, Edinburgh and Glasgow, Life, Industrial, and Accidents, Farringdon Street, E.C. *Sec.*, T. V. Cowling. *Gen. Man.*, Thos. Neill P | 1881 | 48/7 | 64/9 | 93/4 | 559,165 |
| London Life Association. Lim., 81, King William St., E.C. *Act.* and *Sec.*, C. D. Higham, F.I.A. M | 1806 | 60 4 | 78 10 | 108 4 | *4,618,760 |
| Marine and General Mutual, Life, and Marine, 14, Leadenhall St., E.C. *Act.* and *Sec.*, S. Day, F.I.A. . .. .. .. .. M | 1852 | 48 10 | 65 11 | 91 11 | 1,226,207 |
| Metropolitan Life, 13, Moorgate St., E.C. *Sec.*, Bernard Woods .. .. .. M | 1835 | 49 9 | 66/4 | 92 - | 2,120,485 |
| Mutual Life Assoc. of Australasia, 5, Lothbury, Bank, E.C. *Sec.*, Alfred Gilbert .. M | 1869 | 48/- | 65/- | 93/- | 1,800,000 |
| National Assurance of Ireland, Fire, Life, Annuities, and Accident, 3, College Green, Dublin. London Office, 47, Cornhill, E.C. .. .. P | 1822 | 48 7 | 64 3 | 88/10 | *369,852 |
| National Mutual Life, 39, King Street, Cheapside, *Act.* and *Man.*, Geoffrey Marks, F.I.A. *Joint Secs.*, H. G. Rowsell and H. J. Lockwood. *Asst. Act.*, A. Levine, M.A., F.I.A. .. .. M | 1830 | 48 4 | 63 7 | 89 6 | 2,622,025 |
| National Provident, 48, Gracechurch Street, E.C. *Act.* and *Sec.*, Lewis F. Hovil .. .. M | 1835 | 50/2 | 66/3 | 91/1 | 5,012,927 |
| New York Life, Trafalgar Buildings, Trafalgar Square, London, W.C. *Gen. Man.*, C. Seton Lindsay. *Direc. Gen. of Agencies*, T. J. Pulling. *Sec.*, Wm. R. Collinson, F.C.I.S. .. M | 1845 | 48 9 | 66/- | 96 11 | 72,465,231 |
| North British & Mercantile, Fire, Life & Annuities, 61, Threadneedle Street, E.C., and 64, Princes Street, Edinburgh. *Life Man.* and *Act.*, London, H. Cockburn, *Sec.*, R. Carmichael. *Further particulars see page* 711 .. .. P | 1809 | 49 10 | 66 1 | 91 11 | 13,154,000 |
| Northern Assurance, 1, Moorgate St., E.C. *Gen. Man.*, H. E. Wilson .. .. .. P | 1836 | 49/- | £4 8 | 90/10 | 4,249,069 |

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40, *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices*; P, *Proprietary Offices.*

| Title, Etc., of Office. | A | B | C | D | E |
|---|---|---|---|---|---|
| | | | | | £ |
| Norwich Union, Life, Norwich. *Gen. Man.* and *Act.*, J. J. W. Deuchar. London Office, 50, Fleet Street, E.C. .. .. .. .. .. | 1808 | 45 8 | 59 6 | 85 3 | 5,132,841 |
| Patriotic Life, Fire, Accident, Employers' Liability, Fidelity Guarantee, and Burglary, 9, College Green, Dublin. *Man.*, B. H. O'Reilly. *Act.*, Saml. Hunter. London Office, 69, King William Street, E.C. *Man.*, Charles E. Strong .. P | 1824 | 48/8 | 64 5 | 90 4 | *253.036 |
| Pearl, Life, London Bridge, City, E.C. *Man.*, P. J. Foley .. .. .. .. P | 1864 | 49 - | 65 - | 92 - | 1,981,341 |
| Pelican & British Empire, Life, 70, Lombard St., 57, Charing Cross. *Gen Man.*, G. H. Ryan, F.I.A. P | 1797 | 48 11 | 64/7 | 90 8 | 4,750,375 |
| Provident Clerks and General Mutual Life Assurance Association, 27 and 29, Moorgate Street, E.C. *Sec.*, John E. Gwyer .. .. .. M | 1840 | 46 4 | 62 8 | 92 2 | 2,250,000 |
| Provident, Life, 50, Regent St. *Sec.*, H. W. Andras P | 1806 | 49 5 | 64 6 | 90 2 | 3,366,145 |
| Prudential (Ordinary), Life, Holborn Bars. *Sec.*, D. W. Stable. *Further particulars see page 712* P | 1848 | 49 6 | 65 11 | 91 11 | 27,770,943 |
| Refuge, Life, Oxford Street, Manchester. *Joint Mans.*, R. Wm. Green & John W. Proctor. London Office, 29, New Bridge Street P | 1864 | 49/3 | 65 9 | 91/9 | 2,936,191 |
| Rock, Life, Annuity, Capital Redemption, Workmen's Compensation, Accident, Guarantee, and Burglary, 15, New Bridge Street, E.C. *Act.*, G. S. Crisford, F.I.A. .. .. .. P | 1806 | 42 5 | 55/11 | 81/2 | 2,231,933 |
| Royal Exchange Assurance, Fire, Life, Annuities, etc., Royal Exchange, and 29, Pall Mall. *Act.*, H. E. Nightingale, F.I.A. .. . P | 1720 | 49/2 | 64 10 | 90 1 | 3 031,170 |
| Royal, Fire, Life, and Annuities, Royal Insurance Buildings, Liverpool. *Man.*, Chas. Alcock. London Offices, Lombard St. *Sec.*, Jno. H. Croft P | 1845 | 49/9 | 64 1 | 88 3 | 8,680,359 |
| Sceptre, Life and Endowments, 40, Finsbury Pavement, E.C. *Sec.*, J. G. Phillips.. .. P | 1864 | 48 8 | 64 8 | 90/6 | 996,006 |
| Scottish Amicable, Life, St. Vincent Place, Glasgow. *Man.*, N. B. Gunn. *Sec.*, W. G. Spens M | 1326 | 51 9 | 66 3 | 90/1 | 4,540,343 |
| Scottish Equitable, Life, 28, St. Andrew Square, Edinburgh. *Man. & Act.*, G. M. Low. *Secs.*, J. J. McLauchlan and D. Y. Mills. London Office, 19, King William St., E.C. *Sec.*, F. R. Leftwich M | 1831 | 50 - | 65/5 | 90/6 | 5,000,000 |
| Scottish Imperial, Life, 183, West George Street, Glasgow. *Man.* and *Act.*, James Stirling, F.F.A. London Office, 15, King William Street, E.C. P | 1865 | 46/7 | 63 5 | 91 7 | 622.697 |
| Scottish Life, Life, Accident and Annuities, 19, St. Andrew Square, Edinburgh. *Man.*, David Paulin, F.R.S.E. London Office, 13, Clements Lane, King William Street, E.C. *Sec.*, George Struthers P | 1881 | 49/5 | 64 6 | 90/5 | 819.415 |
| Scottish Metropolitan, Life, 25, St. Andrew Square, Edinburgh. *Man.*, H. E. Marriott. London Office, 8, King Street, E.C. *Man.*, C. E. M. Hudson. P | 1876 | 40/8 | 54/7 | 79 7 | 513.959 |
| Scottish Provident, Life and Annuities, 6, St. Andrew Square, Edinburgh. *Man.*, J. G. Watson. *Sec.*, J. Lamb. *Assist. Sec.*, R. T. Boothby. *Act.*, W. G. Walton. London Offices, 17, King William Street, E.C., and 17, Pall Mall, S.W... M | 1837 | 42 4 | 56 6 | 83 2 | 13.000,000 |
| Scottish Temperance, Life & Accident, 105, St. Vincent St., Glasgow *Man.*, Adam K. Rodger. London, 96, Queen St, Cheapside. *Man.*, W. A. Bowie P | 1383 | 48 6 | 63 9 | 89 10 | 869,741 |
| Scottish Union and National, Fire, Life, Pensions, and Annuities, 35, St. Andrew Square, Edinburgh. *Gen. Man.*, J. A. Cook. *Sec.*, J. K. Macdonald. London Office, 3, King William Street, E.C. *Sec.*, William G. Glennie .. .. P | 1324 | 50/6 | 65 6 | 91 - | 4.245.26 |

A, *When Established;* B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40, *and* 50: E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices;* P, *Proprietary Offices.*

| Title, Etc., of Office. | A | B | C | D | E |
|---|---|---|---|---|---|
| | | | | | £ |
| Scottish Widows' Fund, Life and Survivorship, 9, St. Andrew Square, Edinburgh. *Man. & Act.*, A. H. Turnbull. *Sec.*, J. G. C. Cheyne. London Office, 28, Cornhill, E.C. *Sec.*, J. W. Miller M | 1815 | 51'9 | 66'3 | 90'7 | 17,250,000 |
| Standard Life, 3, George Street, Edinburgh. *Man.*, Leonard W. Dickson. London Offices, 83, King William Street, and 3, Pall Mall East. *Sec.*, J. H. W. Rolland .. .. .. P | 1825 | 48 11 | 64 5 | 89 - | 10,622,623 |
| Star, Life, Annuities, Endowments, 32, Moorgate Street, City. *Act.* and *Sec.*, H. G. Hobson P | 1843 | 48/9 | 64 11 | 90 6 | 5,706,018 |
| Sun, Life, 63, Threadneedle Street, E.C. *Act.*, R. Sewell, C.A., F.F.A. *Sec. & Gen. Man.*, E. Linnell .. .. .. .. P | 1810 | 49/2 | 66 6 | 94 2 | 4,846,701 |
| Union. Fire and Life, Cornhill, Charing Cross, and Baker Street. *Gen. Man. and Sec.*, J. Powell. *Act.*, L. K. Pagden .. .. .. P | 1714 | 48 9 | 64 6 | 90 10 | 2,985,098 |
| United Kingdom Temp., etc., Life, 1, Adelaide Place, London Bridge. *Sec.*, Johnson Brooks M | 1840 | 48 10 | 64 11 | 90 6 | 7,750,000 |
| University, Life, 25, Pall Mall, S.W. *Act. & Sec.*, R. Todhunter, M.A. .. .. .. P | 1825 | 49 11 | 65 4 | 91 5 | 930,190 |
| Victoria, Life and Endowment, Memorial Hall Buildings, Farringdon Street, E.C. *Sec.*, Arthur J. Cook, A.I.A. .. .. .. M | 1860 | 49 3 | 65 7 | 93 - | 128,515 |
| Wesleyan and General, Life, Annuities, Sickness, Steelhouse Lane, Birmingham. *Gen. Man.*, R. A. Hunt, F.S.S., A.I.A. London Office, 101, Finsbury Pavement, E.C. *Further particulars see page* 715 .. .. .. .. M | 1841 | 48 9 | 66 6 | 96 3 | 801,415 |
| Westminster and General, Life, 28, King St., Covent Garden, W.C. *Act.*, Ernest Woods, F.I.A. P | 1836 | 48 10 | 65 - | 90 6 | 682,601 |
| Yorkshire, Fire and Life, St. Helen's Square, York. London Office, 2, Bank Buildings, Princes Street. *Further particulars as to a new Endowment Scheme, combining a large amount of assurance with a low premium, see page* 706 .. P | 1824 | 49 1 | 64/9 | 91 7 | 978,511 |

Medical Sickness and Accident, 33, Chancery Lane, W.C. *Sec.*, F. Addiscott, F.I.A., secure to registered members of the Medical Profession, and Licentiates of Dental Surgery in United Kingdom, a weekly allowance during incapacity from sickness or accident. Mutual. Established 1884. Assurance and Annuity Funds £180,000.

A.D. 1809. A.D. 1809.

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Under the "REDUCED PREMIUM" system—applicable to Whole-life and Endowment Assurances—only FOUR-FIFTHS of the ordinary Annual Premium is payable, the other one-fifth remaining a debt to be repaid out of Bonus.

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— *ESTABLISHED 1866.* —

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EMPOWERED BY SPECIAL ACT OF PARLIAMENT.

## Assurance Society

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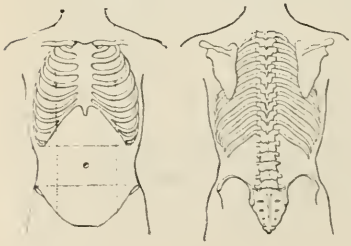

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Sixteen Resident Clinical Appointments are open to Students of the Hospital annually.

Two Broderip Scholarships, of the value of £60 and £40 respectively, are awarded every year for proficiency in Clinical Knowledge.

The Murray Gold Medal and Scholarship, founded in connection with the University of Aberdeen, is awarded every third year to a Student of the Middlesex Hospital.

The following are awarded annually:
The Governors' Prize of 20 guineas (Clinical work in Out-Patient Department).
The Hetley Prize, value £25 (Clinical Medicine, Surgery, and Obstetrics).
The Lyell Medal, value 5 guineas (Surgical, Anatomy and Practical Surgery).
The Leopold Hudson Prize, value 11 guineas (Surgical, Pathology and Bacteriology).
The Freeman Scholarship, value £30 (Obstetric Medicine and Gynæcology).

Exhibitions, of 5 guineas to first year's students, and 10 guineas to second year's students, for the best written and practical examination in Biology, Physiology, and Anatomy. The Emden and Hollins Scholarships, value £100 each, for original research work in the causation of Cancer.

**Middlesex Hospital Entrance Scholarships.**—Two Entrance Scholarships in Classics, Mathematics, and Natural Science; and one in Anatomy and Physiology, open to Students of Oxford and Cambridge Universities who have already passed or completed the curriculum for the professional examinations in Anatomy and Physiology, are offered for competition at the commencement of the Winter Session. Full particulars may be obtained on application to the Dean. Successful candidates are required to become general Students of the School.

THE TUTORS *assist all students, especially those who are preparing for examinations, without extra fee; thus the necessity of obtaining private instruction is obviated.*

MEDICAL, SURGICAL, and OBSTETRIC REGISTRARS, RESIDENT MEDICAL OFFICER, DEMONSTRATOR of ANATOMY.—These valuable appointments are open to qualified men as they become vacant.

GENERAL FEE for the curriculum required by the University of London, 145 guineas; by the Royal Colleges of Physicians and Surgeons, and the Society of Apothecaries, 135 guineas; for DENTAL STUDENTS, 54 guineas. The fees may be paid by instalments.

All communications to be addressed to Mr. J. MURRAY, Dean of the Medical School, Middlesex Hospital, London, W.

J. MURRAY, *Dean.*

# St. Mungo's College, Glasgow.

## FACULTY OF MEDICINE.

THE commodious Medical Buildings of the College are situated within the grounds of the **GLASGOW ROYAL INFIRMARY**; and in this hospital, containing (including the **Ophthalmic Department**) over 600 Medical and Surgical beds, the Clinical and Pathology Classes are conducted.

## LECTURES AND DEMONSTRATIONS.

**Elementary Physics** (at the Technical College)—Prof. BLYTH, M.A., LL.D., F.R.S.E.
**Chemistry**—Prof. ALAN W. C. MENZIES, M.A., B.Sc., F.R.S.E., F.C.S.
**Botany**—Prof. JAMES SWANSON, M.A., M.B.
**Zoology**—Prof. LEONARD A. L. KING, B.A.
**Senior Anatomy, Junior Anatomy, Osteology, and Practical Anatomy**—Prof. ALEX. MACPHAIL, M.B., C.M.
**Physiology**—Prof. DAVID A. FARQUHARSON, M.B., C.M.
**Surgery**—Prof. HENRY E. CLARK, C.M.G., M.R.C.S.
**Clinical Surgery**—Prof. D. N. KNOX, M.A., M.B.
**Practice of Medicine**—Prof. T. K. MONRO, M.A., M.D.
**Clinical Medicine**—Prof. D. C. M'VAIL, M.B.
**Midwifery**—Prof. ROBERT JARDINE, M.D.
**Materia Medica**—Prof. DOUGALL, M.D.
**Pathology**—Prof. WORKMAN, M.D.
**Ophthalmology**—Prof. MAITLAND RAMSAY, M.D.
**Gynæcology**—Dr. JAMES K. KELLY.
**Throat and Nose**—Dr. FULLERTON.
**Forensic Medicine, Public Health Laboratory**—Prof. GALT, M.B., D.P.H. (Camb.).

The Fees for all the Lectures, Practical Classes and Hospital attendance necessary for candidates for the Diplomas of the English or Scotch Colleges of Physicians and Surgeons amount to about **£70.** Comfortable rooms and board are always to be had on moderate terms in close proximity to the College.

A Syllabus of the Medical Curriculum, giving particulars of the classes, fees, etc., may be had gratis on application to—

**The Dean of the Medical Faculty, 86, Castle Street, Glasgow.**

# THE UNIVERSITY OF LIVERPOOL

SUMMER SESSION, 1905. FACULTY OF MEDICINE.

THE SESSION commences on MAY 1st.

Complete Courses of Instruction are offered for Degrees in Medicine and Surgery, and for Medical, Dental, Public Health, and Pharmaceutical Diplomas.

### SCHOOL OF DENTAL SURGERY.

The Dental Hospital is now incorporated with the School, and a new Laboratory has been opened for Mechanical Work.

### DIPLOMAS IN PUBLIC HEALTH.

COMPLETE COURSES OF INSTRUCTION for Diplomas in Public Health are given in the new Laboratories, and in connection with the Sanitary work of the city. These Courses may be commenced at any time.

**PRIZES AND SCHOLARSHIPS** of the value of over **£650** are offered annually.

Prospectuses of the Medical, Dental, Public Health, Pharmaceutical Courses, and School of Tropical Medicine, and further information as to Fees, Scholarships, etc., may be had on application. BENJAMIN MOORE, M.A., D.Sc., *Dean.*

# THE VICTORIA UNIVERSITY OF MANCHESTER.

## *FACULTY OF MEDICINE.*

CURRICULUM.—Complete Courses in all Medical and Surgical subjects are open to Students (Men and Women) preparing for University Degrees or Diplomas, as well as for Dental, Public Health and Pharmaceutical Diplomas.

The University contains spacious and well-equipped Laboratories in all departments of Science and Medicine, and special facilities are offered for the study of Biology, of Chemistry and of Physics, which form an integral part of Medical Education. For Women Students a separate Laboratory for Practical Anatomy and Special Common Rooms are provided.

**The Prospectus of the Medical Faculty and the special Prospectuses for the following departments: Dental, Public Health, Pharmaceutical, will be forwarded on application to the REGISTRAR.**

# GLASGOW ROYAL INFIRMARY.

THE **WINTER SESSION** opened on October 15th, 1904. Number of Beds, including the Ophthalmic Department, is 618.

Special Wards and Beds are set apart for the treatment of Diseases of Women, of the Throat and Nose, and of the Ear. Advice is given at the Dispensary on Diseases of the Skin and of the Teeth, and there is a special department for the treatment of Diseases and Injuries of the Eye. Women Students are admitted to the Clinical Teaching and Practice of the Infirmary, Medical and Surgical Wards being set apart for their exclusive use. A Pavilion for the treatment and diagnosis of diseases by Electricity has just been added.

*Physicians*—Dr. M'Vail, Dr. Middleton, Dr. Lindsay Steven, Dr. Monro, and Dr. Allan.
*Surgeons*—Mr. Clark, Mr. Knox, Mr. Barlow, Mr. Adams, Mr. Newman, Mr. Q. M'Lennan, and Mr. Pringle.
*Gynæcologist*—Dr. J. K. Kelly.
*Diseases of the Ear*—Dr. Kerr Love.
*Surgeon for Diseases of Throat and Nose*—Dr. John Macintyre.
*Assistant Physicians*—Dr. Scott, Dr. Hunter, Dr. Anderson, Dr. Findlay, Dr. McCrorie, Dr. McLaren.
*Extra Assistant Physicians*—Dr. Macnair, Dr. Henderson, Dr. C. S. Marshall.
*Assistant Surgeons*—Mr. Dewar, Mr. Rutherfurd, Mr. M'Gregor, Mr. Luke, Mr. Paterson, Mr. Patrick.
*Extra Assistant Surgeons*—Mr. Faulds, Mr. Macewen, Mr. Kay.

Special Advice is given to Out-Patients on—
*Diseases of the Ear*, by Dr. Kerr Love.
*Diseases of the Throat and Nose*, by Dr. Fullerton.
*Diseases of the Eye*, by Dr. Rowan and Dr. Thomson.
*Diseases of the Skin*, by Dr. Alex. Morton.
*Diseases of Women*, by Dr. Balfour Marshall.
*Diseases of the Teeth*, by Mr. Howard Gray.

*Consulting Electrician*—Dr. John Macintyre.
*Medical Electrician*—Dr. James R. Riddell.
*Assistant Medical Electrician*—Dr. S. Capie.
*Vaccinator*—Dr. H. H. Borland.

**House Appointments.**—Five House Physicians and nine House Surgeons are elected every six months.

Dressers, Clinical Clerks, and Assistants to the Pathologist are selected from the Students.

**Bursaries.**—The David Foulis Scholarship and the John Reid Prize, value £25 each, are open to Students of the Royal Infirmary.

**Fees,** which include Hospital Practice and the Clinical Lectures—For one year, £10 10s.; six months, £6 6s.; three months, £4 4s. The total fee is £21. Vaccination, £1 1s. Pathology, £4 4s. Bacteriology, £2 2s.

Two-thirds of the hospital fees and the full fees for Vaccination, Pathology, and Bacteriology are paid by the Carnegie Trust for those Students who fulfil the conditions of the Trust.

## OPHTHALMIC DEPARTMENT.

*Surgeon*—Dr. Maitland Ramsay.
*Assistant Surgeon*—Dr. Rowan.
*Junior Assistant Surgeon*—Dr. H. W. Thomson.
*Junior Assistant Surgeon and Electrician*—Dr. Gilchrist.
*Pathologist*—Dr. H. Walker.
*Bacteriologist*—Dr. McLure.

*For further information apply to* J. MAXTONE THOM, M.B., Superintendent.

# UNIVERSITY OF EDINBURGH.

## SESSION 1904—1905

*Principal*—Sir WILLIAM TURNER, K.C.B., D.C.L., LL.D., M.B., &c.

The WINTER SESSION opens on 18th October (Practical Anatomy, 1st October), and closes on 18th March; the SUMMER SESSION opens on 1st May and closes about the middle of July.

## FACULTY OF MEDICINE.

*Dean*—Professor A. R. SIMPSON, M.D., D.Sc.

The Faculty embraces fourteen Chairs and thirteen Lectureships; and attached to these Chairs there are about thirty Assistants and Demonstrators. Instruction is given in all the main branches of Medical Science, viz.:—

### PROFESSORS.

*Chemistry*—Alex. Crum Brown, M.D., D.Sc., LL.D.
*Zoology*—J. Cossar Ewart, M.D.
*Botany*—Isaac Bayley Balfour, M.D., D.Sc.
*Physics*—J. G. MacGregor, D.Sc., LL.D.
*Anatomy*—D. J. Cunningham, M.D., D.Sc., LL.D.
*Physiology*—E. A. Schafer, LL.D.
*Materia Medica*—Sir Thomas R. Fraser, M.D., LL.D.
*Pathology*—William S. Greenfield, M.D.
*Forensic Medicine*—Sir Henry D. Littlejohn, M.D., LL.D.
*Public Health*—C. Hunter Stewart, M.B., D.Sc.
*Medicine*—John Wyllie, M.D., LL.D.
*Surgery*—John Chiene, C.B., M.D.
*Midwifery*—Alex. Russell Simpson, M.D., D.Sc.
*Clinical Surgery*—Thomas Annandale, M.D.
*Clinical Medicine*—Sir Thomas R. Fraser, M.D., Wm. S. Greenfield, M.D., John Wyllie, M.D., A. R. Simpson, M.D., D.Sc. (on Diseases of Women).

### UNIVERSITY LECTURERS.

*Mental Diseases*—T. S. Clouston, M.D.
*Diseases of the Eye*—G. A. Berry, M.B.
*Clinical Instruction on Diseases of Children*—Staff of Royal Hospital for Sick Children.
*Embryology and Vertebrate Zoology*—J. Beard, D.Sc.
*Anatomy*—D. Waterston, M.D.
*Applied Anatomy*—Harold J. Stiles, M.B., C.M.
*Histology*—P. T. Herring, M.D.
*Physiological Chemistry*—J. Malcolm, M.D.
*Exper. Physiology*—Sutherland Simpson, M.D., D.Sc.
*Experimental Pharmacology*—W. C. Sillar, M.B., B.Sc.
*Pathological Bacteriology*—Jas. Martin Beattie, M.B., C.M.
*Physics*—C. G. Knott, M.A., D.Sc.
*Diseases of the Larynx, Ear, and Nose*—R. M'Kenzie Johnston, M.D., C.M.
*Tropical Diseases*—A. Davidson, M.D.
*Diseases of the Skin*—W. Allan Jamieson, M.D.
*Clinical Instruction in Infectious Fevers*—J. O. Affleck, M.D., Claude B. Ker, M.D.

Practical Instruction is afforded, under the superintendence of the Professors, in Laboratories with the necessary appliances, and in Tutorial and Practical Classes connected with the above Chairs, and opportunities are afforded to Students and Graduates to extend their practical knowledge and engage in original research.

Opportunities for Hospital Practice are afforded at the Royal Infirmary, the Hospital for Sick Children, Maternity Hospital, the City Fever Hospital, and the Asylum for the Insane. Upwards of 1800 beds are available for the Clinical Instruction of Students of the University.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh, viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.); and Diplomas in Special Branches of Medical and Surgical Practice may also be conferred on Graduates in Medicine and Surgery of the University.

The minimum Class Fees for M.B. and Ch.B., including Hospital Fee (£12) amount to about £115, and the Matriculation and Examination Fees to £28 7s. An additional Fee of £10 10s. is payable by those who proceed to M.D., and £10 10s. by those who proceed to Ch.M.

The annual value of the Bursaries, Prizes, Scholarships, and Fellowships in the Faculty of Medicine amounts to about £3,600, and that of the other Bursaries, etc., tenable by Students of Medicine, amounts to about £1,820.

Instruction is also given in Public Health, and the Degrees of B.Sc. and D.Sc. in Public Health are conferred by the University.

Residences for Students, Graduates, and others, situated within easy reach of the University, afford excellent board and lodging on very moderate terms.

Further information as to Matriculation, the Curricula of Study for Degrees, etc., may be obtained from the Dean of the Faculty of Medicine; and for Degrees in the Faculties of Arts, Science, Divinity, Law, and Music from the Deans of these Faculties; or from the Clerk of Senatus; and full details are given in the University Calendar, published by James Thin, 55, South Bridge.

The Preliminary and Degree Examination Papers in each of the Faculties are also published by Mr. James Thin, viz., Arts and Science Preliminary Papers, and Bursary Papers, 1s.; Medical Preliminary Papers, 6d.; Degree Papers—Arts, 1s.; Science, 9d.; Divinity, Law, Medicine, and Music, 6d. each.

By Authority of the Senatus,

L. J. GRANT, *Secretary of Senatus.*

# UNIVERSITY OF DURHAM

## COLLEGE OF MEDICINE, NEWCASTLE-ON-TYNE.

DEGREES IN MEDICINE, SURGERY, AND HYGIENE.—Six Degrees and one Diploma are conferred by the University of Durham—*viz.*, the Degrees of Bachelor in Medicine, Doctor in Medicine, Bachelor in Surgery, and Master in Surgery, Bachelor in Hygiene, and Doctor in Hygiene; and Diploma in Public Health. These Degrees are open to Men and Women.

Attendance at the University of Durham College of Medicine during one of the five years of professional study, or subsequently to qualification elsewhere, is required as part of the curriculum for the Degrees, except in the case of Practitioners of more than fifteen years' standing, who have attained the age of forty years, who can obtain the Degree of M.D. after examination only.

The first three Examinations for the Degree of M.B. may be passed prior to the commencement of attendance at Newcastle, and previous to passing the Preliminary Examination in Arts of the University.

A candidate who has passed the First and Second Examinations of the University will be exempt from the First and Second Examinations of the Conjoint Board in England, and will be entitled to present himself for the Final Examination of the Board on the completion of the necessary curriculum.

The Extra Arts Examination must be passed previously to the candidate's entry for his Final Examination for the Degree.

All information, together with Examination Papers, &c., is given in the Calendar of the University of Durham College of Medicine, Newcastle-upon-Tyne, which may be obtained from the Secretary at the College.

*Scholarships, &c.*—A University of Durham Scholarship, value £100, for proficiency in Arts awarded annually to full Students in their first year only. The Dickinson Scholarship—value, the interest of £400, and a Gold Medal—for Medicine, Surgery, Midwifery, and Pathology. The Tulloch Scholarship—value, the interest of £400—for Anatomy, Physiology, and Chemistry. The Charlton Scholarship—value, the interest of £700—for Medicine. The Gibb Scholarship—value, the interest of £500—for Pathology. The Luke Armstrong Scholarship—interest on £680—for Comparative Pathology. The Stephen Scott Scholarship—interest on £1000—for promoting the study of Surgery and allied subjects. Heath Scholarship—the late George Yeoman Heath, M.D., M.B., D.C.L., F.R.C.S., President of the University of Durham College of Medicine, bequeathed the sum of £4000 to found a Scholarship in Surgery, the interest to be awarded every second year. Gibson Prize—value, the interest of £225—for Midwifery and Diseases of Women and Children. The Goyder Memorial Scholarship (at the Infirmary)—value, the interest of £325—for Clinical Medicine and Clinical Surgery. At the end of each Session a Prize of Books is awarded in each of the regular Classes. Assistant Demonstrators of Anatomy, Prosectors, and Assistant Physiologists are elected yearly. Pathological Assistants, Assistants to the Dental Surgeon, Assistants in the Eye Department, Clinical Clerks, and Dressers are appointed every three months.

The Royal Infirmary contains 280 beds. Clinical Lectures are delivered by the Physicians and Surgeons in rotation. Pathological Demonstrations are given as opportunity offers, by the Pathologist. Practical Midwifery can be studied at the Newcastle Lying-in Hospital, where there is an Out-door Practice of about 700 cases annually.

### FEES.

(*a*) A composition Ticket for Lectures at the College may be obtained—

I.—By payment of 72 guineas on entrance.

II.—By payment of 46 guineas at the commencement of the First Year, and 36 guineas at the commencement of the Second Year.

III.—By three annual instalments of 36, 31, and 20 guineas respectively, at the commencement of the Sessional year.

(*b*) Fees for attendance on Hospital Practice:—

| | £ | s. | d. |
|---|---|---|---|
| For 3 months' Medical and Surgical Practice | 5 | 5 | 0 |
| „ 6 „ „ „ „ | 8 | 8 | 0 |
| „ 1 year's „ „ „ | 12 | 12 | 0 |
| „ Perpetual „ „ „ | 26 | 5 | 0 |

Or by three instalments at the commencement of the Sessional year—*viz.*, First year, 12 guineas; Second year, 10 guineas; Third year, 6 guineas. Or by two instalments—First year, 14 guineas: second year, 12 guineas.

In addition to the above fees, the Committee of the Royal Infirmary require the payment of 2 guineas yearly up to three years from every Student attending the Infirmary for a year or part of a year. After three years of attendance, such payment will be no longer necessary.

(*c*) Single courses of Lecture, 5 guineas.

Fees for Lectures, etc., at the College must be paid to the Secretary, and Fees for Hospital Practice to the House-Physician at the time of entry.

Further particulars may be obtained from the Sec., PROF. HOWDEN, at the College.

# University College, BRISTOL.

## *FACULTY OF MEDICINE.*

THIS COLLEGE is the only Institution in the West of England which provides a complete Medical Curriculum.

The lectures and instruction given in the Faculty of Arts and Science of University College, Bristol, are adapted to the Matriculation Examination of the University of London, and to the Preliminary Examination of the College of Preceptors, and also to the Preliminary Scientific Examination of the University of London ; and Students can complete in Bristol the entire course of study required for the Medical and Surgical Degrees of the University of London, the Diplomas of the Royal College of Physicians of London and the Royal College of Surgeons of England, and of the Apothecaries' Society of London, and for the Examinations of the Army and Navy Boards.

A complete Dental Curriculum is also provided.

It is now arranged that Students of the College shall be admitted to the clinical practice of the Bristol Royal Infirmary and the Bristol General Hospital conjointly, and consequently both these institutions are open to all Students.

The Infirmary and the Hospital comprise between them a total of 470 beds ; and both have very extensive Out-patient Departments, Special Departments for the Diseases of Women and Children, and of the Eye, Ear, and Throat, besides large Out-door Maternity Departments, and Dental Departments.

Students of the College also have the privilege of attending the practice of the Bristol Royal Hospital for Sick Children and Women, containing 104 beds, and that of the Bristol Eye Hospital, with 40 beds. The total number of beds available for Clinical Instruction is therefore 614.

Fever Hospital Practice is attended at the Hospitals for Infectious Diseases of the Sanitary Authority of the Corporation of Bristol ; and Lunatic Asylum Demonstrations at the City and County Lunatic Asylum, Fishponds.

Very exceptional facilities are thus afforded Students for obtaining a wide and thorough acquaintance with all branches of Medical and Surgical work. Each Student has the opportunity of personally studying a large number of cases, and of acquiring practical skill in diagnosis and treatment.

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**FEES.**—Composition Fee for Lectures, 70 Guineas or 55 Guineas. Dental Composition Fee, 60 Guineas.

Perpetual Medical and Surgical Practice, 20 Guineas each, or in one payment, 35 Guineas. Fever Hospital Practice and Lunatic Asylum Demonstrations, 3 Guineas each.

**Scholarships and Prizes.**—Numerous valuable Scholarships and Prizes are offered for Competition.

**Entrance Scholarships.**—(*a*,) University Entrance Scholarship, value £50; (*b*,) Lady Haberfield Entrance Scholarship, value about £30.

**Special Six Months' Course for Diploma in Public Health.**—Fee, 25 Guineas.

**Medical Library.**—Students have the use of a large and important collection of books, consisting of over 20,000 vols.

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*Prospectuses and all particulars may be obtained on application to—*

**JAMES RAFTER**, *Registrar; or to*

**E. MARKHAM SKERRITT, M.D.**, *Dean.*

# UNIVERSITY of ABERDEEN (Founded 1494.)

## FACULTY OF MEDICINE.

THE Degrees in Medicine granted by the University are—Bachelor of Medicine, Bachelor of Surgery, Doctor of Medicine, and Master of Surgery. They are conferred only after Examination, and only on Students of the University. Women are now admitted to instruction and graduation on the same footing as men. A Diploma in Public Health is conferred after Examination on Graduates in Medicine of any University in the United Kingdom.

The Faculty of Medicine embraces twelve chairs, from which instruction is given in all the main branches of Medical Science.

Practical Classes in connection with these chairs are conducted by the Professors and Assistants in Laboratories furnished with all the necessary appliances; and opportunities are afforded to Students and Graduates to extend their practical knowledge and engage in original research.

Instruction is also given in special departments of Medical Practice by Lecturers appointed by the University Court.

Clinical instruction is obtained in the Royal Infirmary, Royal Lunatic Asylum, the Sick Children's Hospital, the City (Fever) Hospital, the General Dispensary, and Lying-in and Vaccine Institutions, and the Ophthalmic Institutions.

Bursaries, Scholarships, Fellowships and Prizes, to the number of 50 and of the Annual Value of £1183 may be held by Students in this Faculty.

The cost of Matriculation, Class and Hospital Fees for the whole curriculum, inclusive of the fees for the Degrees, is usually about £150.

A Prospectus of the Classes, Fees, &c., may be had on application to the Secretary of the Faculty of Medicine.

R. W. REID, M.D., F.R.C.S., *Dean of Medical Faculty.*

# Post-Graduate College,

*(WEST LONDON HOSPITAL)*

HAMMERSMITH ROAD, W.

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The Physicians and Surgeons attend daily at 2.30 p.m. Instruction is given by the Assistant Physicians and Surgeons in the O.P. Department daily at 2.15 p.m.; and there are Special Departments for the Diseases of the Eye, Ear, Throat and Nose, Women, and for Orthopædic Surgery. Post-Graduate Lectures are delivered daily, except Saturdays, at 5 o'clock in the Lecture Room.

**No Junior Students** are admitted to the Practice of the Hospital. A Special Building containing a **Reading and Writing Room** is provided for the use of Post-Graduates.

A fully-equipped **Clinical Investigation Laboratory and an X-Ray Department** have been established at the Hospital. A Special Class in Bacteriology is held at the beginning of each month by the Pathologist. A Certificate signed by the Staff is awarded after three months' Hospital Attendance.

The Fee for the Hospital Practice, including the Post-Graduate Lectures, is £5 5s. for Three Months; £8 8s. for Six Months; and £12 12s. for One Year. Full particulars can be obtained from the undersigned at the Hospital.

L. A. BIDWELL, Dean.

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JAMES ROBERTSON, Solicitor, 54, GEORGE SQUARE, EDINBURGH,
Clerk to the College.

# RICHMOND, WHITWORTH, AND HARDWICKE HOSPITALS, DUBLIN.

THE SESSION 1904-5 commenced on MONDAY, October 3rd, 1904. These Hospitals for Surgical, Medical, and Fever cases respectively, contain nearly 300 beds.

PHYSICIANS—Sir J. T. Banks, K.C.B., M.D., LL.D., Physician to the King in Ireland; Late Regius Professor of Medicine, Univ. Dublin.
Joseph O'Carroll, M.D., Examiner in Medicine, Royal University.
J. B. Coleman, C.M.G., M.D., Examiner in Medicine, Conjoint Board.
R. Travers Smith, M.D., Examiner, Conjoint Board.

SURGEONS—Sir William Thomson, C.B., F.R.C.S.; Surgeon to the King, and late Surgeon to the Lord Lieutenant in Ireland; late Examiner in Surgery, Army Med. Dep.
Sir Thornley Stoker, Ex-President R.C.S.; late Fellow and Examiner in Surgery, Royal University; Surgeon to Swift's Hospital for Lunatics.
Sir Thomas Myles, M.D., F.R.C.S., late President Royal College of Surgeons.

OPHTHALMIC SURGEON—Robt. D. Joyce, M.R.C.S.E., L.R.C.P. Lond.

THROAT SURGEON—Robert H. Woods, F.R.C.S.; Mem. Council, R.C.S.

GYNÆCOLOGIST—T. Henry Wilson, Examiner in Midwifery, Conjoint Board.

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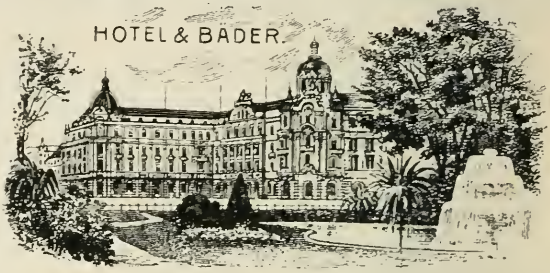


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For particulars, apply to THE SECRETARY, Nordrach-upon-Mendip, Blagdon, near Bristol.
Telegrams: "NORDRACH," BLAGDON.

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Telegraphic Address: "PENDYFFRYN, PENMÆNMAWR."

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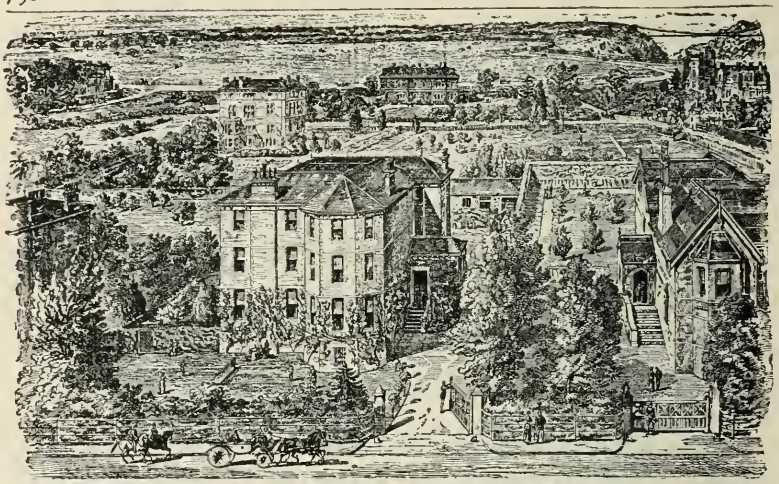

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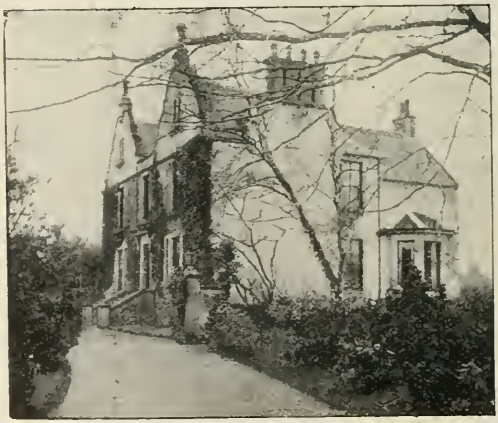

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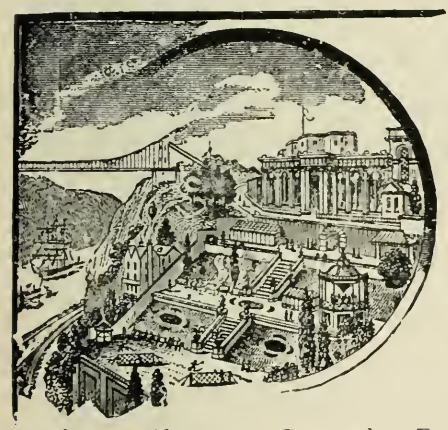

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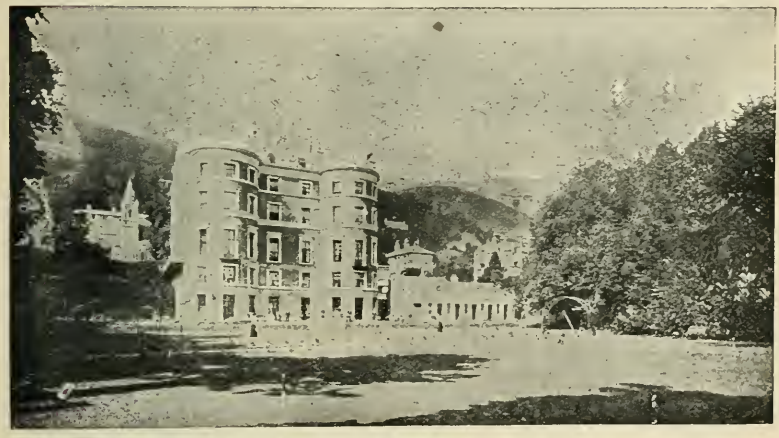

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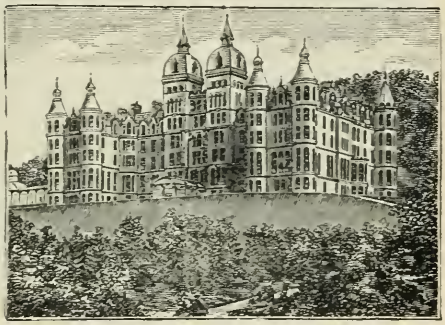

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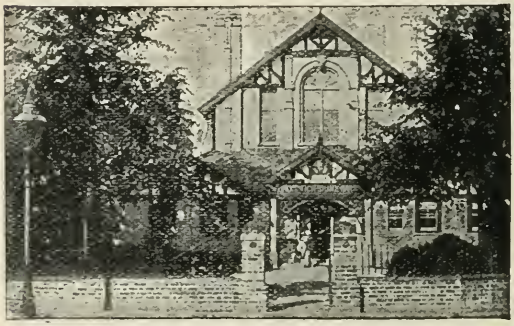

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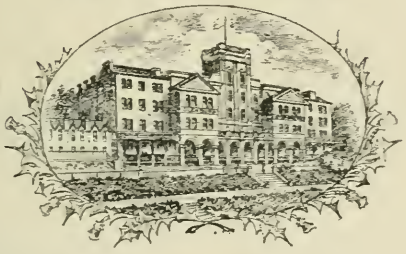

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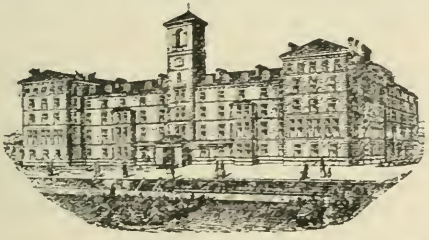

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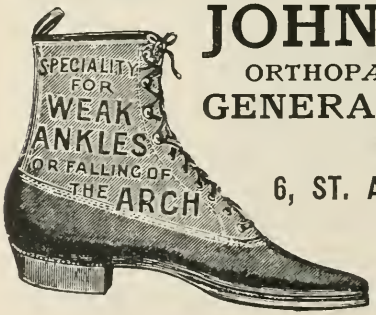


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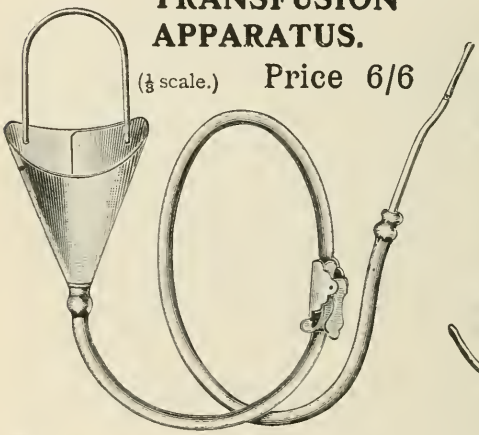

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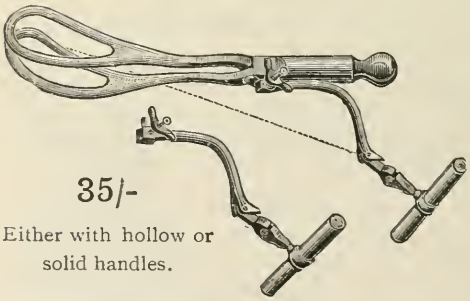

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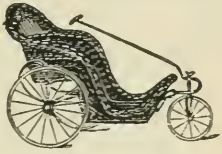

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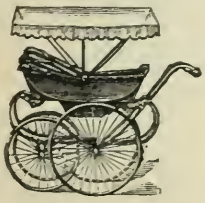

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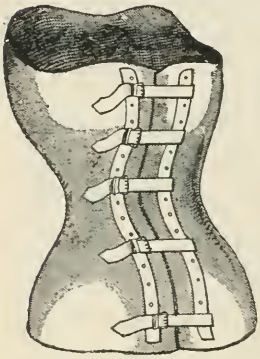

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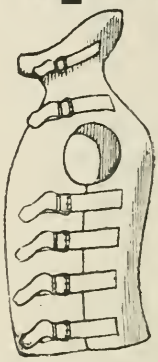

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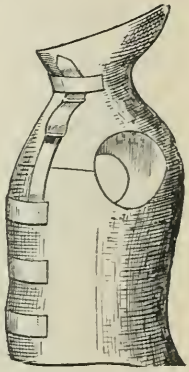

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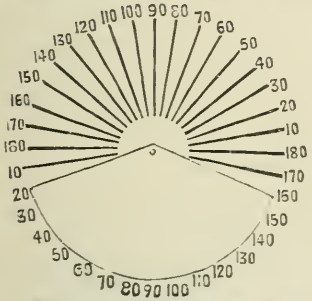


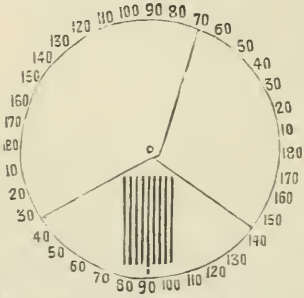


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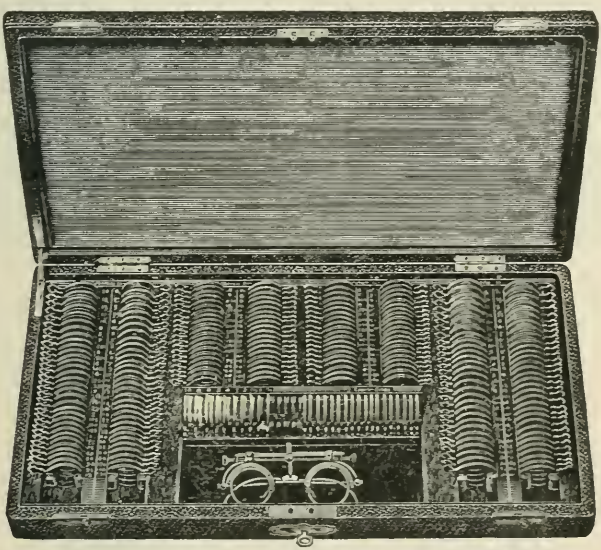

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# CHLORIDE OF ETHYL TUBE

(PATENTED).

**For use with Clover's Inhaler.**

*Suggested by Mr. NORMAN PORRITT, M.R.C.S., Etc.,*
*Surgeon to the Huddersfield Infirmary.*

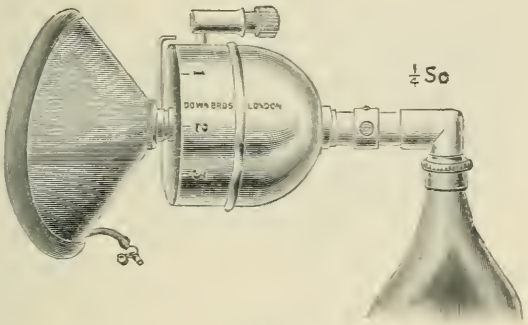


Fig. 1.

Fig. 1 shows the tube interposed between the Bag and the Ether Chamber of Clover's Inhaler for use in combination with Ether.

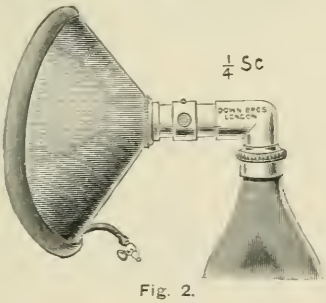


Fig. 2.

Fig. 2 shows the tube fitted directly between the Bag and Face piece, this constitutes a complete Chloride of Ethyl Inhaler.

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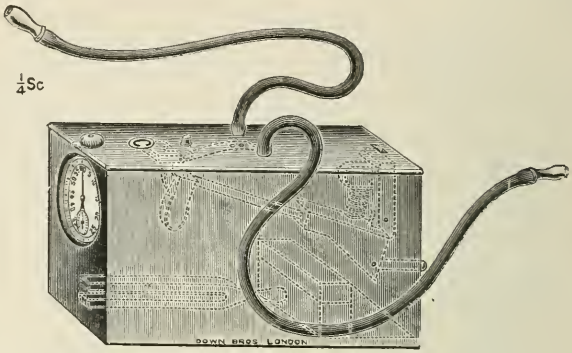


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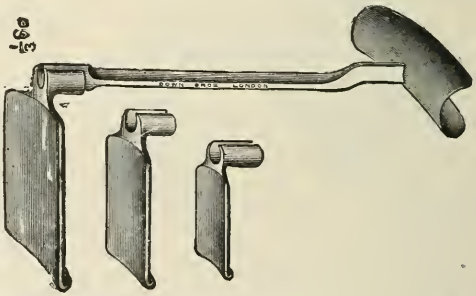


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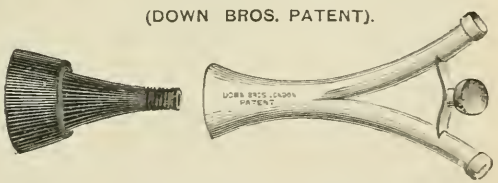

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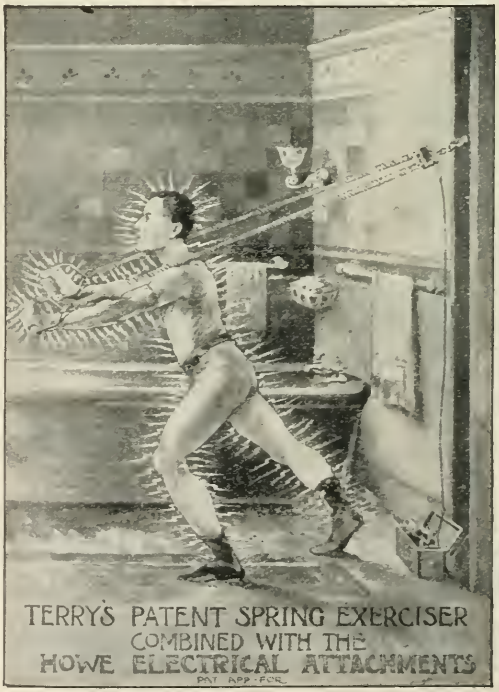


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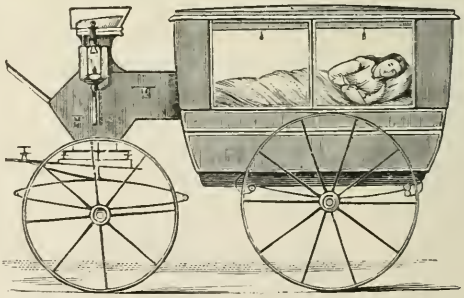

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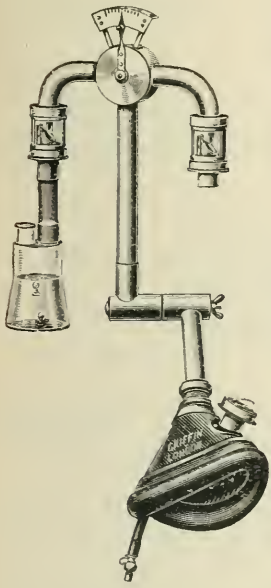

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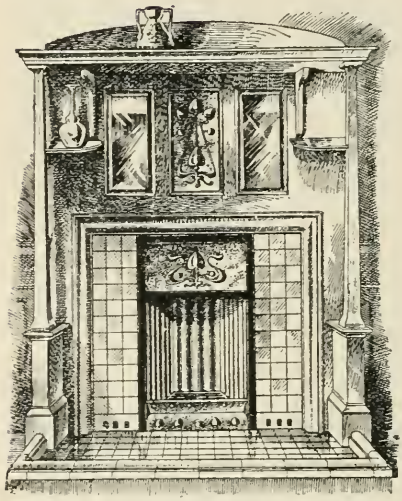

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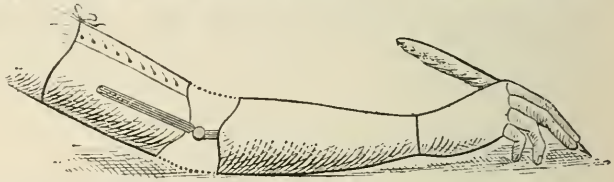

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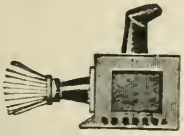

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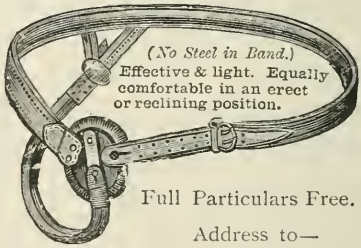


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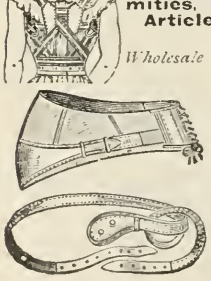

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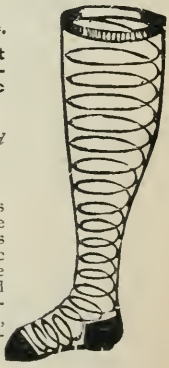

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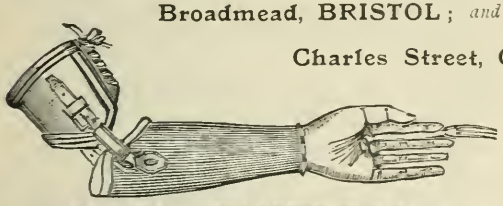

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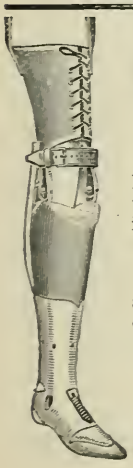

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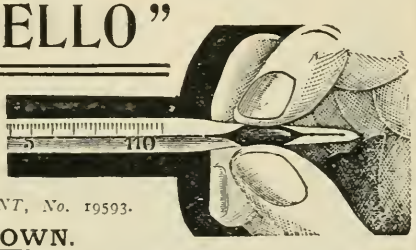


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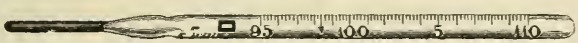


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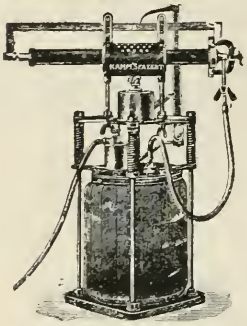

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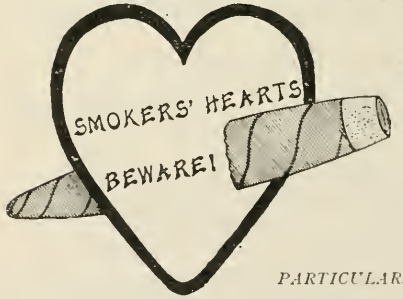


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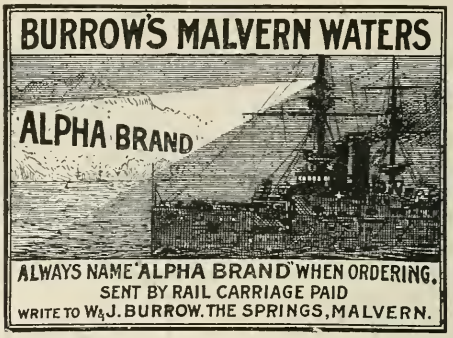
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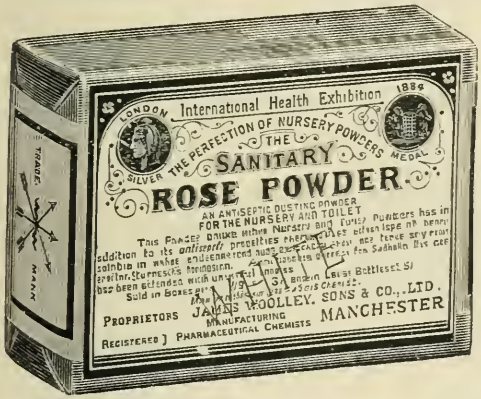


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